

## Vision Screening for Children One to Five Years of Age: Recommendation Statement

► See related Putting Prevention into Practice quiz on page 227.

This summary is one in a series excerpted from the Recommendation Statements released by the U.S. Preventive Services Task Force (USPSTF). These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF Web site at <http://www.uspreventiveservicestaskforce.org>.

A collection of USPSTF recommendation statements reprinted in *AFP* is available at <http://www.aafp.org/afp/uspstf>.

### Summary of Recommendations and Evidence

The U.S. Preventive Services Task Force (USPSTF) recommends vision screening for all children at least once between the ages of three and five years to detect the presence of amblyopia or its risk factors (Table 1).

#### B recommendation.

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of vision screening for children younger than three years.

#### I statement.

### Rationale

**Importance.** Approximately 2 to 4 percent of preschool-aged children have amblyopia, an alteration in the visual neural pathway in the developing brain that can lead to permanent vision loss in the affected eye. Amblyopia usually occurs unilaterally, but can occur bilaterally. Identification of vision impairment before school entry could help identify children who may benefit from early interventions to correct or improve vision.

**Detection.** The USPSTF found adequate evidence that vision screening tools have reasonable accuracy in detecting visual impairment, including refractive errors, strabismus, and amblyopia.

**Benefits of detection and early intervention.** The USPSTF found adequate evidence that early treatment for amblyopia, including the use of cycloplegic agents, patching, and eyeglasses, for children three to five years of age leads to improved vision outcomes. The USPSTF found inadequate evidence that early treatment of amblyopia for children younger than three years leads to improved vision outcomes.

**Harms of detection and early intervention.** The USPSTF found limited evidence regarding harms of screening, including psychosocial

adverse effects, for children three years and older. False-positive screening results may lead to the overprescribing of corrective lenses. Adequate evidence suggests that the harms of treatment of amblyopia for children three years and older are limited to reversible loss of visual acuity resulting from patching of the nonaffected eye. The USPSTF found inadequate evidence of the harms of screening and treatment for children younger than three years.

**USPSTF assessment.** The USPSTF concludes with moderate certainty that vision screening for children three to five years of age has a moderate net benefit. The USPSTF concludes that the benefits of vision screening for children younger than three years are uncertain and that the balance of benefits and harms cannot be determined for this age group.

### Clinical Considerations

**Patient population.** This recommendation applies to all children one to five years of age.

**Screening tests.** Various screening tests that are feasible in primary care are used to identify visual impairment among children. These tests include visual acuity tests, stereo-acuity tests, the cover-uncover test, and the Hirschberg light reflex test (for ocular alignment/strabismus), as well as the use of autorefractors (automated optical instruments that detect refractive errors) and photoscreeners (instruments that detect amblyogenic risk factors and refractive errors).

**Treatment.** Primary treatment for amblyopia includes the use of corrective lenses, patching, or atropine treatment of the nonaffected eye. Treatment may consist of a combination of interventions.

**Suggestions for practice regarding I statement.** In deciding whether to refer children younger than three years for screening, clinicians should consider the following:

**Table 1. Vision Screening in Children One to Five Years of Age: Clinical Summary of the USPSTF Recommendation**

|   |  |   |
|---|--|---|
| Population  | Children three to five years of age  | Children younger than three years                     |
| Recommendation  | Provide vision screening<br>Grade: B   | No recommendation<br>Grade: I (insufficient evidence) |
| Screening tests   | Various screening tests are used in primary care to identify visual impairment in children, including:<br>Visual acuity test      Hirschberg light reflex test<br>Stereoacuity test      Autorefraction<br>Cover-uncover test      Photoscreening  |   |
| Timing of screening   | No evidence was found regarding appropriate screening intervals.   |   |
| Interventions   | Primary treatment for amblyopia includes the use of corrective lenses, patching, or atropine treatment of the nonaffected eye. Treatment may also consist of a combination of interventions.   |   |
| Balance of harms and benefits   | There is adequate evidence that early treatment of amblyopia in children three to five years of age leads to improved vision outcomes.<br>There is limited evidence on harms of screening, including psychosocial adverse effects, in children three years and older.<br>There is inadequate evidence that early treatment of amblyopia in children younger than three years leads to improved vision outcomes.  |   |
| Suggestions for practice regarding the I statement  | In deciding whether to refer children younger than three years for screening, clinicians should consider:<br><i>Potential preventable burden:</i> screening later in the preschool years seems to be as effective as screening earlier.<br><i>Costs:</i> initial high costs associated with autorefractors and photoscreeners.<br><i>Current practice:</i> typical vision screening includes assessment of visual acuity, strabismus, and stereoacuity; children with positive findings should be referred for a comprehensive ophthalmologic examination. |   |
| NOTE: For the full recommendation statement and supporting documents, go to <a href="http://www.uspreventiveservices.org">http://www.uspreventiveservices.org</a> . |  |   |
| USPSTF = U.S. Preventive Services Task Force.   |  |   |

- **Potential preventable burden.** Most studies show that screening and treatment later in the preschool years seem to be as effective at preventing amblyopia as screening and treatment earlier in life.

- **Costs.** Potential disadvantages of using photoscreeners and autorefractors are the initial high costs associated with the instruments and the need for external interpretation of screening results with some photoscreeners.

- **Current practice.** Typical components of vision screening include assessments of visual acuity, strabismus, and stereoacuity. Younger children often are unable to cooperate with some of the screening tests performed in clinical practice, such as visual acuity testing. Stereoacuity testing often is omitted and may be performed incorrectly when attempted. Screening of younger

children may be difficult and often yields false-positive results because of the child's inability to cooperate with testing. Children with positive findings should be referred for a full ophthalmologic examination to confirm the presence of vision problems and to receive further treatment.

**Screening intervals.** The USPSTF did not find adequate evidence to determine the optimal screening interval.

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The "Other Considerations," "Discussion," and "Recommendations of Others" sections of this recommendation statement are available at <http://www.uspreventiveservicestaskforce.org/uspstf/uspsvsch.htm>.

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