Guiding Practices in Early Childhood Vision Screening

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Why We Developed This Guide

Stakeholders
Impact on Childhood Development

- Impaired vision affects a child’s cognitive, emotional, neurological, and physical development

- Limits the range of experiences and kinds of information to which the child is exposed

Developmental Vision Screening

- Screening method is dependent on
  - age and capability of the child being screened
  - examiner’s experience

- Identify problems that could interfere with typical development
Conditions Impacting Vision Development

- **Misaligned eyes**: Eyes crossing or wandering consistently after age 4 to 6 months.
- **Conditions resulting in Blurred images**: One or both eyes may have a high amount of farsightedness, nearsightedness, or astigmatism.
- **Asymmetry in refractive error**: One eye could be more farsighted, nearsighted, or have more astigmatism than the other.
- **Abnormalities of eye structures causing visual deprivation**: Examples include congenital cataract and ptosis (droopy eyelid).

Critical Screening Program Components

1. Offer appropriate parent educational materials
2. Obtain parent permissions
3. Use age-appropriate and evidence-based screening tools and procedures
4. Re-screen or refer children difficult to screen
5. Provide results in easy-to-understand language (written and oral) with clear and time-limited steps for follow-up

Critical Screening Program Components

6. Create a system for following-up to ensure eye exam occurs
7. Link parents with a Dr. specializing in children
8. Obtain exam results for screening files
9. Evaluate program effectiveness annually
### Vision Screening Components

1. **Tests for Acuity OR Amblyogenic Risk Factors**
   a. **Instruments**
      a. Photoscreening or handheld autorefraction
   b. **Acceptable Alternative to Instrument Screening**
      a. Charts for screening 3 to 5 years of age
      b. Fix and Follow Test for very young and untestable

2. **Observation for Alignment**

### Establishing a Consistent Process for Early Childhood Vision Screening

Developmental vision screening should be conducted with age-appropriate, evidence-based tools and procedures.

### Acceptable Screening Tools:

<table>
<thead>
<tr>
<th><strong>Chart-based Screening</strong></th>
<th><strong>Instrument-based Screening</strong></th>
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</thead>
<tbody>
<tr>
<td>• Measures visual acuity by reading optotypes</td>
<td>• Detects risk factors that could lead to amblyopia.</td>
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<tr>
<td>• Visual Acuity = clarity or sharpness of vision</td>
<td>• Instruments do not test visual acuity or function.</td>
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<tr>
<td>• Optotype = picture, symbol, or letter child must identify</td>
<td>• Photorefraction or handheld autorefraction are currently acceptable instruments</td>
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Instrument or Eye Chart?
• Instrument-based screening is quick and requires minimal cooperation of the child
• Successful chart-based testing is highly dependent on patient age and screener experience
• Children <3 yrs: difficult to obtain a reliable result with a vision chart
• Children 3 to 5 yrs: instrument-based detection of risk factors for amblyopia is preferred

When to use an Instrument:
• 6 months to 3 years:
  – elective if the screener is trained, has time, and equipment is readily available
• 3 to 5 years:
  – Photoscreening and handheld autorefraction is preferred

Instrument Recommendations
Photoscreening
• assesses both eyes simultaneously
• obtains an optical image of the eye
• interpreted by a trained operator or a computer
• detects refractive error, media opacities, and misalignment

Autorefraction
• evaluates the refractive error of each eye individually (with no eye drops)
• can not detect misalignment
Instrument Recommendations

- To select the appropriate referral setting for the ages of children screened with your device:
  - consult with pediatric eye care providers,
  - review AAPOS guidelines,
  - or contact the manufacturer of your device, or
  - review the device user’s manual for instruction on changing referral criteria.
- If you suspect a large number of over-referrals, ensure the machine is properly calibrated and/or revise referral criteria settings.

When to Use an Eye Chart?

- As an alternative to instrument screening in children 3 – 5 years if:
  - Screener is not trained
  - Instrument is not available
  - Instrument indicates unreliable results
  - Child cannot tolerate instrument screening

Eye Chart Recommendations

<table>
<thead>
<tr>
<th>Optotype</th>
<th>BEST PRACTICE</th>
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</tr>
<tr>
<td>Distance</td>
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<td>Illumination</td>
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Aids for Testing

- Lap card with optotypes to play a matching game
- Occlusion adhesive patch or opaque paper tape

Example

- Example: Vision in Preschoolers (VIP) Screener from GoodLite
When to Use Fix and Follow Test

- Can be used as a last resort alternative to determine if a child has basic functional vision if:
  - An instrument is not available
  - Instrument indicates unreliable result
  - Child cannot tolerate the screening process
  - Child does not pass (or is not age eligible for) instrument or chart-based screening
  - IEP/IFSP Team convenes to determine appropriate diagnostic measures for children with potential vision loss so as to complete the evaluation.

Fix and Follow Test Recommendations

- **Description:**
  - As a target is moved in front of a child, an observer determines if the child can follow the object with both eyes open.

- **Equipment:**
  - Small, quiet toy (not a noise maker)

- **Procedure:**
  - Hold the target centered 14-16 inches in front of the child’s eyes
  - Slowly move target horizontally while simultaneously observing the child’s eyes to see whether the child is following the object (This should take 2-3 seconds.).
  - Slowly move the target up and down vertically to confirm.
  - The child may move his/her head to follow the object.

If a child fails the fix and follow test:

- A significant problem may be present.
- Refer parent to Ophthalmologist/Optometrist.
- IEP/IFSP Team must convene to determine appropriate diagnostic measures for children with potential vision loss so as to complete the evaluation.
When to Observe for Alignment

- As a second step in the screening process
- Always conduct intentional observation for strabismus that may not be detected through instrumental screens or behavioral screening using the Fix and Follow Test.
- Observation allows the screener to check for constant strabismus.

Observation for Alignment Recommendations

- **Description:** Observing alignment
- **Equipment:** None
- **Facilities:** Well-lit room
- **Procedure:**
  - Observe child's eyes to see if one eye appears to turn in, out, up, or down in relation to the other.
  - The position of the head for tilt (chin up or down) should also be noted.
  - If the child has prescription glasses, it is imperative that he or she wear them. The prescription glasses may already be correcting a previously diagnosed crossed eye.

Establishing Consistent Criteria for Follow-Up Decisions

- When vision screening is conducted as part of determining eligibility for early intervention or special education and related services, children may have enough useful vision to participate in the comprehensive evaluation even though vision screening results merit parental follow-up for a comprehensive eye exam.
- In these cases, early intervention and/or special education teams need to develop a process for tracking eye exam results and treatment plans.
- For the school system, follow-up should be documented in the IEP records at the time of eligibility determination.
- If the vision evaluation is obtained after the IEP meeting and results show significant vision issues, the IEP Team must reconvene to review all data and determine the educational significance of the information.
2014 School Nurse Conference

For more information:

- National Center for Children's Vision and Eye Health at Prevent Blindness
  [www.nationalcenter.preventblindness.org](http://www.nationalcenter.preventblindness.org)
- Prevent Blindness America [www.preventblindness.org](http://www.preventblindness.org)
- Prevent Blindness North Carolina [nc.preventblindness.org](http://nc/preventblindness.org)
- American Association for Pediatric Ophthalmology and Strabismus [www.aapos.org](http://www.aapos.org)
- American Optometric Association [www.aoa.org](http://www.aoa.org)
- Year of Children’s Vision:
  - [www.schoolhealth.com/media/pdf/YOCV_slides_022614.pdf](http://www.schoolhealth.com/media/pdf/YOCV_slides_022614.pdf)
  - [nationalcenter.preventblindness.org/year-children’s-vision](http://nationalcenter.preventblindness.org/year-children’s-vision)