Vision Screening for Infants, Toddlers and Preschoolers

The first three years of life are critical in the development of good vision. One in twenty preschool age children has impaired vision, most commonly due to amblyopia, strabismus (misaligned eyes) or significant refractive error such as farsightedness, astigmatism and nearsightedness. Strabismus and refractive errors can lead to amblyopia – reduced vision due to lack of visual stimulation during early childhood. Equal input from both eyes is necessary for normal development of the brain’s visual cortex. In addition to permanent vision loss, undetected vision abnormalities can lead to cognitive, emotional, neurological and physical impairment.

Young children generally do not complain about poor vision. Serial screening in the medical home is the most effective approach to early detection and provides the best opportunity for effective treatment.

Eye and vision screening is recommended at birth, 6-12 months, 42 months, and annually thereafter until 5 years of age, as well as any time a concern arises.1 Vision screening for preschool children (3-5 years) is a recommended Bright Futures well-child preventive care service.

Risk Factors for Vision Problems:
- Less than 1500 grams at birth
- History of maternal ‘TORCH’ complex infections*
- Family history of conditions causing or associated with eye problems (e.g. retinoblastoma, congenital cataract, glaucoma, strabismus, amblyopia)
- Neurological and developmental disorders or systemic disease
- Use of medications associated with eye or vision abnormalities

*Toxoplasmosis, Other (syphilis, hepatitis B, varicella zoster, HIV, parvovirus B19, enteroviruses, lymphocytic choriomeningitic virus), Rubella, Cytomegalovirus, Herpes simplex

WHAT MIGHT YOU DO IN YOUR PRACTICE?
- Be familiar with the risk factors for vision problems (see box above)
- Educate parents about signs of eye problems that require further evaluation (Refer parents to the AAP Healthy Children website: ’Warning Signs of Vision Problems in Children’)
  - Misaligned eyes or poor visual fixation
  - Light sensitivity, itchiness, pain or discomfort
  - Pus or crusting in either eye
- Include a vision history and examination at well-child visits beginning at infancy:
  - Fixation and following
  - Red reflex
  - Nystagmus
  - Asymmetries
  - Ocular misalignment (strabismus)
  - Visual acuity abnormalities
  - Structural defects (urgent referral required for opacities of the ocular media)

- **Strabismus** can be evaluated by the corneal light reflex symmetry, the cover-uncover and cross cover tests, or the Bruckner test (corneal light reflex examination through an ophthalmoscope from 2-3 feet away in a darkened room).2
- **Visual acuity** in infants and young children is most accurately determined by “preferential looking tests” (Teller Acuity Card test). Children 3 years and older can be screened with the Tumbling E, HOTV chart or LEA symbols chart ( Fixation and following ). Older children can be tested with a Snellen chart.
- **Instrument-based Vision Screening (Photo-screening)** - Children 6 months to 5 years can benefit from this automated vision screening technology which does not depend on behavioral responses of the child. It is especially useful in the preverbal, preliterate or developmentally delayed child.3 Instrument-based screening does not measure acuity, but assesses for the presence of amblyopia risk factors. Note that visual acuity charts are acceptable for screening between 3 and 5 years of age and can be effectively used with many children in this age range.
Refer to Ophthalmologist for Screenings Showing:
Any child with risk factors for vision problems listed above. And….

Newborns and Infants
- Abnormal red reflex
- Structural abnormalities of the eye
- Poor visual tracking after 3 months
- Strabismus
- Nystagmus
- Chronic tearing or discharge
- Family history of retinoblastoma or other risk factors (see above)

Toddlers and Preschool Children
- Strabismus
- Nystagmus
- Persistent ptosis, eyelid mass or red eye
- Asymmetric pupil size (>1mm)
- Fail photo-screening
- Unable to read at least 20/40 with either eye on acuity chart

References

Vision Resources
Regional:
- Healthy Eyes Washington, the Washington Academy of Eye Physicians and Surgeons http://www.waeps.org/
- Seattle Children’s Hospital Ophthalmology http://www.seattlechildrens.org/clinics-programs/ophthalmology/

National:
- The American Association for Pediatric Ophthalmology and Strabismus (AAPOS) http://www.aapos.org/
  - The AAPOS disease library http://www.aapos.org/terms
- The American Academy of Pediatrics ‘Healthy Children - Eyes’ website http://www.healthychildren.org/English/health-issues/conditions/eyes/Pages/default.aspx

Snohomish County Special Needs Information and Resources:
- For children birth through age 18: Contact: Snohomish Co Early Intervention Program 425.388.7402
  Children with Special Health Care Needs 425.339.8652
- For children under age three: Contact: Snohomish Co Early Intervention Program 425.388.7402
- For children age three and older: Contact: Local school district

<table>
<thead>
<tr>
<th>District</th>
<th>Contact</th>
<th>Phone</th>
<th>District</th>
<th>Contact</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington</td>
<td>Susan Queirolo</td>
<td>360.618.6266</td>
<td>Darrington</td>
<td>Val Cook</td>
<td>360.436.2150</td>
</tr>
<tr>
<td>Edmonds</td>
<td>Dawn Burgess</td>
<td>425.431.7555</td>
<td>Everett</td>
<td>Laurie Cwikla</td>
<td>425.385.5264</td>
</tr>
<tr>
<td>Granite Falls</td>
<td>Nancie Wilder</td>
<td>360.283.4311</td>
<td>Index</td>
<td>Linda Tate</td>
<td>360.793.1330</td>
</tr>
<tr>
<td>Lake Stevens</td>
<td>Janet Rich</td>
<td>425.335.1520</td>
<td>Lakewood</td>
<td>Jim Roan</td>
<td>360.652.4501 #3029</td>
</tr>
<tr>
<td>Marysville</td>
<td>Cathy Fridrich</td>
<td>360.653.0825</td>
<td>Monroe</td>
<td>Heidi Dalton</td>
<td>360.804.2600</td>
</tr>
<tr>
<td>Mukilteo</td>
<td>Linda Schmitt</td>
<td>425.356.1204</td>
<td>Northshore</td>
<td>Shelly Fields</td>
<td>425.408.5594</td>
</tr>
<tr>
<td>Snohomish</td>
<td>Collin Revoir</td>
<td>360.563.7310</td>
<td>Stanwood</td>
<td>Lynn Currey</td>
<td>360.629.1250</td>
</tr>
<tr>
<td>Sultan</td>
<td>Cyd Leahy</td>
<td>360.793.9801x125</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>