State of California—Health and Human Services Agency
Department of Health Care Services

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**DATE:** October 25, 2011

CHDP Provider Information Notice No.: 11-11

**TO:** ALL CHILD HEALTH AND DISABILITY PREVENTION (CHDP) PROGRAM PROVIDERS AND MEDI-CAL MANAGED CARE PLANS

**SUBJECT:** CHDP HEALTH ASSESSMENT GUIDELINES (HAG) REVISION: SECTION 61, VISION SCREENING

The purpose of this CHDP Provider Information Notice No. 11-11 is to inform CHDP providers of the revised section of the CHDP Health Assessment Guideline (HAG), Section 61, formerly Section 601 Vision Screening.

When compared to the 2002 guideline, the revised Vision Screening HAG includes additional criteria for referral including recommendations for follow up of preterm infants, revised recommendations for vision screening charts, and additional vision screening resources: The revised section also includes

- Table 61.1 – Basics of Vision Testing
- Table 61.2 – Eye and Vision Screening Recommendations

The revised section and tables may be downloaded from the following link:
http://www.dhcs.ca.gov/services/chdp/Pages/Pub156.aspx

Your continuing participation in the CHDP Program is greatly appreciated. If you have any questions, please contact your local CHDP Program.

**ORIGINAL SIGNED BY ROBERT DIMAND, M.D.**

Robert Dimand, M.D.
Chief Medical Officer
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# VISION SCREENING

## RATIONALE

Vision problems affect 1 in 20 preschoolers and 1 in 4 school-aged children. Early and periodic eye examinations and vision screenings are essential because they often identify conditions that, when left untreated, result in problems with school performance, permanent loss of vision, blindness or potential loss of life. Ocular disorders include refractive errors, amblyopia ("lazy eye"), strabismus ("crossed eyes" or "wall-eyes"), cataracts, glaucoma, retinopathy of prematurity and retinoblastoma. Risk factors for vision problems include extreme prematurity; family history of congenital cataracts, retinoblastoma or metabolic or genetic diseases; significant developmental delay or neurologic disease; and systemic disease associated with eye abnormalities.

- Refractive errors are the most common ophthalmologic disorders in children. A 2003 study examining variation by ethnicity found that in a sample of 2,523 children ages 5-17, 9.2% of the children were myopic (near-sighted), 12.8% were hyperopic (far-sighted), and 28.4% were astigmatic; with myopia most common in Asian and Hispanic children, and hyperopia most common in Caucasian children.[1]
- Amblyopia affects 2 to 3 out of every 100 children. If not recognized and treated early (at or before 5 years of age), it is likely to persist into adulthood and usually results in a permanent loss of visual acuity and resolution. Amblyopia is the most common cause of monocular visual impairment among children and young adults. While the risk of amblyopia is greatest for children during their first 3 years of life, amblyopia may develop until children complete their visual development at approximately age 9 years.
- Strabismus occurs in 2 to 3 percent of children and is one of the primary causes of amblyopia.
- Most ocular disorders can be successfully treated if identified and addressed early (by the age of 5).
- Preterm infants diagnosed with retinopathy of prematurity (ROP) are at greater risk for strabismus, glaucoma, cataracts and myopia later in life. They should undergo yearly eye examination and vision screening to identify and treat these conditions. Approximately 20% of all premature infants will develop some form of strabismus or refractive error by 3 years of age. Infants born at less than 32 weeks gestation or less than 1500 g should receive an eye examination every 6 months by an ophthalmologist or optometrist, whether or not ROP is present.[2]

1 Refractive Error and Ethnicity in Children. *Arch Ophthalmol.* 2003;121:1141-1147
2 Joint Statement of AAP. Screening Examination of Premature Infants for Retinopathy of Prematurity. *PEDIATRICS* Volume 117, Number 2, February 2006. www.pediatrics.org/cgi/doi/10.1542/peds.2005-2749

## SCREENING REQUIREMENTS

- Screen for visual problems at each health assessment visit. See Table 61.1, *Basics of Vision Testing* and Table 61.2 *Eye and Vision Screening Recommendations*.
- Perform visual acuity testing in a well-lit room, free of distractions. Eye chart should be at the eye level of the child being screened.
- For all ages utilize the screening chart appropriate to child's cognitive level.
- Utilize clean non-disposable occluders or disposable eye "occluders", such as Dixie® cups or tongue blades with back-to-back stickers.
- Prescription eyeglasses should always be worn during visual acuity testing.
- Perform red reflex and corneal light reflex testing in a darkened room.
- All pediatric health care providers should be familiar with the most recent version of eye examination and screening guidelines of the American Association for Pediatric Ophthalmology and Strabismus, the American Academy of Ophthalmology, and the American Academy of Pediatrics.
- CHDP does not accept vision screening using a machine (e.g. Sure Light) because there is insufficient information on the accuracy of these devices in children.

## CONSIDERATIONS FOR REFERRAL, TREATMENT, AND/OR FOLLOW-UP

- Treat or refer any eye conditions to the appropriate specialist.

- Refer any of the following conditions to an ophthalmologist or optometrist:

    1. History or clinical observation of head tilt, squinting, nystagmus or other clinical finding consistent with a possible vision problem.
    2. Avoidance of covering one eye or non-conjugate ocular movement in uncovered eye during the cover/uncover test or visual acuity screening.
    3. Any abnormalities observed with the corneal light reflex test or cover test.
    4. Abnormalities observed with the ophthalmoscopic exam (e.g. white reflex) should be referred to an ophthalmologist.
    5. A visual acuity of 20/50 or worse in either eye for children age 3 through 5 years. The HOTV or the LEA charts are the preferred charts for this age group. A visual acuity of 20/40 or worse in either eye for children age 6 years and older. The Sloan or Snellen chart is the preferred chart for this age group.
    6. A two line difference or more in visual acuity between the eyes on a standardized chart, such as the Snellen, HOTV or equivalent chart (e.g. 20/25 in one eye and 20/40 in the other eye).
    7. Visual acuity testing is recommended for all children starting at 3 years of age. In the event that the child is unable to cooperate for vision testing, a second attempt should be made 4 to 6 months later.
    8. For children 4 years and older, the second attempt should be made in 1

month. When vision testing is unsuccessful, children should be referred to an ophthalmologist or optometrist experienced in the care of children for an eye evaluation.[3]

9. Shyness, inattention or poor cooperation may be related to a vision problem.

- Refer all children at high risk of eye problems to an ophthalmologist or optometrist experienced in treating children for a specialized eye examination.
    1. 'High risk' includes prematurity, family history of congenital cataracts, retinoblastoma, metabolic or genetic diseases, significant developmental delay or neurologic difficulties, and systemic disease associated with eye abnormalities.

## ADDITIONAL RESOURCES

Additional information regarding vision screening can be obtained from the following links:

- American Academy of Pediatrics (AAP) Policy Statement

- American Academy of Ophthalmology Pediatric Ophthalmology/Strabismus Panel. Preferred Practice Guidelines. Pediatric Eye Evaluations (2010). http://one.aao.org/CE/PracticeGuidelines/PPP_Content.aspx?cid=621682dc-7871-4351-830e-545b1273d84c

- CHDP PIN 08-08: PEDIATRIC VISION SCREENING INSTRUCTION (original link cited in the PIN is no longer valid) http://one.aao.org/Flash/VisionScreening/PediatricVisionScreening.html

- Bright Futures/American Academy of Pediatrics Recommendations for Pediatric Preventive Health Care http://www.ataamerica.com/arc1/users/pdfforms/AAP%20Bright%20Futures%20Periodicity%20Sched%20101107.pdf

- Prevent Blindness Northern California www.eyeinfo.org
    - Statement on Screening for Preschool Children: http://www.eyeinfo.org/pdfs/Statement_on_Screening.pdf

- Minnesota Department of Health Vision Screening Procedure Summary Chart by Age

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3 Joint Statement of the American Academy of Pediatrics, The American Academy of Certified Orthoptists, American Association for Pediatric Ophthalmology and Strabismus, and American Academy of Ophthalmology (2003): **Eye Examination in Infants, Children, and Young Adults by Pediatricians.** PEDIATRICS, 111(4): 903-907 (reaffirmed 2007) http://one.aao.org/CE/PracticeGuidelines/ClinicalStatements_Content.aspx?cid=e57de45b-2c03-4fbd-9c83-02374a6c09e0

http://www.health.state.mn.us/divs/fh/mch/hlthvis/materials/vissumchart06.pdf

- Minnesota Department of Health Vision Screening Online Training Program
  http://www.health.state.mn.us/divs/fh/mch/webcourse/vision/toc.cfm

## Table 61.1 BASICS OF VISION TESTING

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|---|---|
| **Ocular History**: | Include family history of refractive error, strabismus, amblyopia, cataracts, glaucoma; birth history of very premature birth or very low birth weight (<1500 gms), congenital deafness or hearing problems (Usher's syndrome); past history of refractive error, cataracts, eye injury, or any visual impairment; or signs of possible ocular conditions including eyes drifting, eyelid drooping, holding objects or books closer than expected. |
| **Red Reflex**: | Examine the red reflex in a darkened room by holding an ophthalmoscope at a distance of about 2 to 3 feet. Look through the ophthalmoscope at each of the child's eyes. Both retinal reflexes should be red or red-orange and of equal intensity. In very darkly pigmented people, the reflex may be dark orange or grayish. To be considered normal, the red reflex of the two eyes should be symmetrical. Dark spots in the red reflex, a blunted red reflex on one side, lack of a red reflex, or the presence of a white reflex (retinal reflection) are all indications for referral to an ophthalmologist. |
| **Corneal light reflex**: | Conduct the corneal light reflex test in a darkened room by holding the ophthalmoscope or pen light about two feet away from the child's eyes. The corneal light reflections should be symmetric, falling on corresponding points of each eye. If there is asymmetry in color, size or brightness, the eyes may be improperly aligned or strabismic. Any asymmetry is an indication for referral. |
| **Cover-uncover test**: | Perform the cover-uncover test on children age four months to eight years. Have the child focus on a stationary object 3 to 10 feet away. Then place a cover in front of one eye and watch for movement of the uncovered eye. Repeat the exam with the other eye. For younger children, a near target is better. No movement should be detected if the eyes are properly aligned, but strabismus is present if the unoccluded eye shifts to establish fixation once the other eye, which had fixed on the object, is occluded. |
| **Fix and Follow**: | Perform on children four months to three years of age. Stabilize the child's head while moving a target in horizontal, vertical and oblique patterns in relation to a center point on the visual axis. Move the target from the center point toward the child. Abnormal results are when the eyes do not follow in unison or movements are jerky, uneven, or "break" further than 4 inches from the bridge of the nose. Use of head movements may indicate that the child's eyes are not working together and are not symmetric in their ability to follow an object. |
| **Visual acuity test**: | Perform the visual acuity test with children age three years and older.<br><br>Recommended tests for children age three to five years include the LEA symbols and HOTV charts, or Allen flip cards for children unable to read the visual acuity chart. The Tumbling E chart can also be used but be cautious of normal letter reversal and understanding of testing procedure.<br><br>Testing distance of 10 feet is recommended for all visual acuity tests with wall charts for children ages 3-5. Perform the vision test in a well-lit room free of distractions with the eye chart at eye level. Measure the distance chart and draw a line indicating where the child should stand (with heels on the line) or sit (with back of chair above line). Screen each eye separately and be sure the child cannot see around the eye cover. Record the smallest line where the child accurately sees one more than one-half of the characters without squinting or any other abnormal head positions.<br><br>Visual acuity testing for children ages six and older may be done at a distance of 10 or 20 feet. The testing should be done with a Snellen Sloan chart, except in cases in which the child is unable to recognize letters, such as some special needs children, in which case the HOTV/LEA chart should be used.<br><br>Other vision screening tests that may be useful but do not replace wall charts and are not required for CHDP examinations are: the Stereo Acuity test (Random Dot E), Titmus Stereograms testing stereopsis, and the Color Vision test, which may be most useful for boys.<br><br>For children of any age unable to complete visual acuity testing, see *Considerations for Referral, Treatment, and/or Follow-Up*, page 61-2. |
| **Photoscreening**: | This technique, when performed by trained observers, can detect eye abnormalities including strabismus, cataracts and retinal abnormalities. The technique is still evolving. It is not a substitute for visual acuity measurement. |

## Table 61.2 EYE AND VISION SCREENING RECOMMENDATIONS

| Age | Screening Method | Indicators Requiring Further Evaluation |
|---|---|---|
| **Newborn to 2 months** | Inspection | Structural abnormality |
| | Red reflex* (ophthalmoscope) | Abnormal or asymmetric |
| | Corneal light reflex (any light source) | Asymmetric |
| **2 months to 3 years** | Inspection | Structural abnormality |
| | Red reflex* | Abnormal or asymmetric |
| | Corneal light reflex | Asymmetric |
| | Fix and follow with both eyes and each eye | Failure to fix and follow |
| **3 years through 5 years** | Inspection | Structural Abnormality |
| | Visual acuity | Visual acuity of 20/50 or worse in either eye or 2 line difference between eyes |
| | Red reflex | Abnormal or asymmetric |
| | Corneal light reflex | Asymmetric |
| | Cover-uncover test | Ocular refixation movements |
| | Fundoscopic exam | Any abnormality |
| **6 years and older** | Inspection | Structural abnormality |
| | Visual acuity | Visual acuity of 20/40 or worse in either eye or 2 line difference between eyes |
| | Red reflex | Abnormal or asymmetric |
| | Corneal light reflex | Asymmetric |
| | Cover-uncover test | Ocular refixation movements |
| | Fundoscopic exam | Any abnormality |
| | Stereopsis/Random Dot E | Any Abnormality |

*Refer to American Academy of Pediatrics (AAP) policy statement:

(http://aappolicy.aappublications.org/cgi/content/full/pediatrics;111/4/902)