

Eye and Vision Care Services *for California Children*



California Senate Office of Research

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By Agnes Lee

California Senate Office of Research
Don Moulds, Director
1020 N Street, Suite 200
Sacramento, CA 95814
(916) 651-1500
www.sen.ca.gov/sor

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Executive Summary

In recent years numerous legislative proposals have been introduced with the goal of improving the identification and treatment of eye and vision problems among children in California. Supporters of these efforts claim that early identification and treatment of eye problems can improve a child's performance in school and thus increase his or her chances for success in adulthood.

Assessing the public policy options for making improvements is difficult: not only is there little research and data on this issue, there is no consensus among eye and vision care professionals regarding appropriate testing for children.

Current state requirements related to the testing of children's vision are outlined in this report, as are suggested incremental steps for improving both the identification of children's eye and vision problems and the ability to increase access to services to treat such problems.

Public Eye and Vision Care Services for Children

California provides vision screening tests to school-age children through its public schools. Children who may qualify for special education due to a visual impairment receive vision assessments. The Child Health and Disability Prevention (CHDP) program provides vision screenings at no cost to eligible low-income children, including infants and preschool-age children.

Several public health coverage programs, including Medi-Cal, Healthy Families, and some county programs, provide a range of vision benefits for children of low-income families, including eye examinations and glasses. The California Children's Services program also provides children of low-income families with treatment services for serious eye conditions.

California's Vision Screening Requirements

The state requires routine vision screenings for school-age children. California also requires certain local entities to identify and assess children, including infants and preschool-age children, for vision impairments to determine if a child qualifies for special education services.

California's vision screening requirements for children are not designed to identify all eye and vision problems. For example, the state requires routine vision screenings for school-age children, but not for infants or preschool-age children. School screenings must test for (1) color vision in males only (color vision deficiency is seldom found in females), and (2) far-distance vision for all children. There are no requirements to test for other eye or vision problems, such as near-distance vision. If a student fails the school's vision screening, the school district must advise the parents on corrective actions; however, the state does not require parents to report back to the school district as to whether the child actually received follow-up care.

Access to Health Coverage for Eye and Vision Care

Many children do not have health coverage for vision benefits and thus may have difficulty paying for services. And while many children from uninsured, low-income families could access vision benefits through public health coverage programs, many do not.

Outreach and Assistance for Public Eye and Vision Care

Some agencies provide limited outreach and assistance to families in accessing eye and vision care services. School districts provide information to families regarding CHDP health screening services, and families may receive referrals to services from school districts, state-subsidized child care and development programs, and the CHDP program.

Policy Steps to Consider

Among the incremental steps the state could take to improve the identification of children's eye and vision problems and increase access to services, here are some considerations:

- **Require state-subsidized center-based child care and development programs to provide information to parents about the Child Health and Disability Prevention program.**
- **Convene a group of stakeholders to review school vision screening requirements and make recommendations for improvements.**
- **Require school districts to provide information to parents about the limited scope of vision screenings.**
- **Require school districts to inform parents about the availability of the Medi-Cal and Healthy Families programs if their child needs follow-up care.**
- **Increase outreach to families enrolled in Medi-Cal and Healthy Families regarding the availability of vision benefits.**
- **Require Healthy Families to determine the feasibility of including the repair or replacement of glasses as a covered vision benefit.**

Introduction

The number of children with eye and vision problems is difficult to measure, and estimates vary greatly depending on the measurement method. Even how eye and vision problems are defined varies significantly.

According to an analysis of a 2002 National Health Interview Survey data, 2.5 percent of children under age 18 had vision problems.¹ The prevalence of vision problems in children under age 6 (1 percent) was lower than for children ages 6 to 17 (3.3 percent); however, the low percentage reported for younger children may partly reflect that many may not have been tested.

Other estimates indicate that the prevalent and significant eye and vision problems among preschool-age children are amblyopia (2-5 percent), strabismus (3-4 percent), and significant refractive error (10-15 percent).² A study of one California school district found that by age 13 the prevalence of myopia (nearsightedness) was 20 percent.³

In recent years numerous legislative proposals have been introduced with the goal of improving the identification and treatment of eye and vision problems among children in California. Supporters of these efforts claim that early identification and treatment of eye problems can improve a child's performance in school and thus increase his or her chances for success in adulthood.

¹ Centers for Disease Control and Prevention, "Visual Impairment and Use of Eye-Care Services and Protective Eyewear Among Children—United States, 2002," *Morbidity and Mortality Weekly Report*, vol. 54, no. 17 (May 6, 2005), p. 425-429. The National Health Interview Survey (NHIS) classified a child as having a vision problem if a respondent answered that the child had trouble seeing, even when wearing glasses or contact lenses. For a child under two years of age, NHIS only asked a respondent if the child had any trouble seeing.

² National Eye Institute, Clinical Studies Database, "Vision in Preschoolers Study (VIP Study)," <http://www.nei.nih.gov/neitrials/viewstudyweb.aspx?id=85>.

³ Karla Zadnik, "Myopia Development in Children," *Optometry and Vision Science*, vol. 74, no. 8 (August 1997), p. 603-608.

What Are the Most Prevalent Eye and Vision Problems Among Young Children?

- **Amblyopia:** Dimness of sight, especially in one eye, without an apparent change in the eye structure. Also called lazy eye.
- **Refractive Error:** A defect in the eye that prevents light rays from being brought to a single focus on the retina. Includes nearsightedness (myopia) and farsightedness.
- **Strabismus:** Failure of the two eyes to gaze at the same object because of an imbalance in the eyeball muscles.

Assessing the public policy options for making improvements is difficult: there is little research and data on this issue. For example, there is a lack of statewide data on the prevalence of unidentified eye and vision problems and whether children— with or without health coverage— receive necessary eye care.

In addition there is no consensus among eye and vision care professionals regarding the appropriate testing for children. For example, there is no agreement as to whether preschool-age children should receive a routine eye examination⁴ before starting school. The American Public Health Association and the American Optometric Association recommend multiple routine eye examinations for all preschool-age children.⁵ However, the American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus recommend that while children who fail vision screenings should have a follow-up eye exam, routine eye examinations for children with no abnormal symptoms have no medical benefit.⁶

⁴ All references to eye examinations throughout this report refer to an exam performed by an eye care professional, such as an optometrist or ophthalmologist.

⁵ American Optometric Association, "The Need for Comprehensive Vision Examination of Preschool and School-age Children," <http://www.aoa.org/x1911.xml>, and American Public Health Association, "Policy Statements Adopted by the Governing Council of the American Public Health Association, October 24, 2001," *American Journal of Public Health*, vol. 92, no. 3 (March 2002), p. 451-452.

⁶ A Joint Statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology, "Policy Statement: Vision Screening for Infants and Children" (Revised and Approved 2001), <http://www.aao.org/aao/member/policy/children.cfm>.

Public Eye and Vision Care Services for California Children

California provides vision screenings to children through its schools. And children who may qualify for special education services due to a visual impairment are eligible to receive a vision assessment. The Child Health and Disability Prevention program provides vision screenings at no cost to eligible low-income children, including infants and preschool-age children.

Several public health coverage programs, including Medi-Cal, Healthy Families, and some county programs, provide a range of vision benefits for children of low-income families, including eye examinations and glasses. The California Children's Services program also provides children of low-income families with treatment services for serious eye conditions.

School Districts

California requires school districts to provide vision screenings that check for color vision (for males only) and visual acuity from a far distance. State regulations require school districts to use an optotype test (which involves using various sizes of letters or figures to check one's vision) when checking visual acuity and define the threshold for screening failure (see appendix B on page 45).⁷ Persons authorized to conduct vision screenings in school districts include:

- licensed and credentialed medical practitioners, such as school nurses, physicians, ophthalmologists, and optometrists;
- certificated school district or county employees with a teaching credential who have completed specified training for vision screening;

⁷ State regulations allow school districts to use other screening methods if the child cannot be screened using an optotype test due to the child's age or special needs.

- persons employed by an agency that has contracted with a school district—and is authorized by the county superintendent of schools—to perform vision screenings.

The California Department of Education recommends procedures to test for vision problems other than those required by law,⁸ such as strabismus.

Vision Assessments for Special Education

What Is Special Education?

Special education provides instruction specifically designed to meet the unique needs of individuals with a disability. California provides special education to eligible individuals, from infants to young adults, at no cost to the family. Participants may receive special education services in a variety of settings, including a day care center, a preschool, a standard classroom, a classroom that emphasizes specially designed instruction, the community, and the work environment.

School districts, special education local plan areas,⁹ and county offices of education identify and assess children with special needs to determine whether a child qualifies for special education; these local agencies also must have procedures to identify children suspected of having a visual impairment. Local procedures include:

- coordinating with a school's vision screening program;
- informing staff members and parents of behavior that may indicate a visual impairment;

⁸ California Department of Education, "A Guide for Vision Testing in California Public Schools" (2005).

⁹ A special education local plan area (SELPA) is a service area developed in accordance with the California Education Code.

- coordinating with local eye care specialists and other possible referral sources, such as regional centers¹⁰ and infant preschool programs.

The California Department of Education provides guidelines for assessing students with visual impairments. Among its recommendations: Begin with an examination by an ophthalmologist or optometrist who assesses near- and distant-visual acuity and field of vision and provides the cause of and prognosis for a particular visual impairment.

Child Health and Disability Prevention

The Child Health and Disability Prevention (CHDP) program provides preventive health services to children who are eligible for Medi-Cal, whose family income does not exceed 200 percent of the federal poverty level (FPL), or who are enrolled in Head Start¹¹ and state preschool programs. The CHDP program provides a range of health screenings and evaluation services, including vision screening, hearing screening, immunizations, and complete physical examinations.¹² These services are available at no cost to eligible children.

Local CHDP programs are responsible for maintaining a referral and follow-up system for diagnosis and treatment services, although the program does not pay for follow-up services.

The California Department of Health Services (DHS) provides guidelines for CHDP vision screenings (see appendix C on page 49), which include recommendations on what to screen for and which methods to use based on a child's age. Health screenings and evaluation services must be performed by a physician, certified family nurse practitioner, or certified pediatric nurse practitioner, and it is recommended that specific eye and vision problems be referred to an ophthalmologist or optometrist. State regulations provide a

¹⁰ Regional centers are nonprofit private corporations with offices located throughout California that contract with the Department of Developmental Services to provide or coordinate services and support for individuals with developmental disabilities.

¹¹ The federal Head Start program serves children from birth to age five years and pregnant women; its goal is to increase the school readiness of young children in low-income families.

¹² The Early and Periodic Screening, Diagnosis, and Treatment program is a federally mandated program for children who are eligible for Medi-Cal, and Child Health and Disability Prevention oversees its screening and follow-up services.

guide on how often health assessments, including vision screenings, should be performed (see appendix D on page 59).

Medi-Cal

The Medi-Cal program provides health coverage for low-income individuals, including children, parents, seniors, persons who are blind, and persons with disabilities. Medi-Cal offers health, vision, and dental benefits, including physician visits, hospital care, and laboratory services. Children up to age 18 are eligible for Medi-Cal if their family income does not exceed a certain percentage of the FPL.¹³

Medi-Cal covers the cost of eye examinations and glasses once every two years.¹⁴ Also covered are medically necessary contact lenses, low vision aids, and prosthetic eyes. There is no co-payment for vision benefits for children.

Healthy Families

The Healthy Families program provides low-cost health coverage for children whose family incomes are too high to qualify for Medi-Cal, but do not exceed 250 percent of the FPL. Program benefits include physician visits, prescription drugs, hospital inpatient care, vision care, dental care, and preventive care. Families with incomes over 200 percent of the FPL, but less than or equal to 250 percent of the FPL, pay monthly premiums of \$15 per child, up to a maximum of \$45 per family. Families with incomes equal to or less than 200 percent of the FPL pay monthly premiums of \$4 to \$9 per child, up to a maximum of \$27 per family.

Healthy Families covers eye examinations and glasses once every 12 months. Families contribute a co-payment of \$5 for each eye examination and \$5 for

¹³ Infants under age one year are eligible if their family income does not exceed 200 percent of the FPL; children ages one to five years are eligible if their family income does not exceed 133 percent of the FPL; children ages six to 18 are eligible if their family income does not exceed 100 percent of the FPL. Children with family incomes that meet these eligibility levels are not required to pay premiums. Children with family incomes that exceed these eligibility levels may receive Medi-Cal coverage by paying a share of the cost during the month in which health expenses are incurred.

¹⁴ Medi-Cal covers eye examinations more often than every two years if they are medically necessary.

each pair of glasses. Healthy Families also covers contact lenses for certain medically necessary conditions.¹⁵

County Health Coverage Programs

As of March 30, 2006, 18 of California's 58 counties¹⁶ provide health coverage programs for low-income, uninsured children who are not eligible for Medi-Cal or Healthy Families. And each of these counties offers vision benefits as a part of its children's health coverage program.

California Children's Services

The California Children's Services (CCS) program provides treatment services to children and young adults under age 21 who have certain physical limitations and chronic health conditions or diseases. Individuals are eligible if their family income is less than \$40,000, out-of-pocket expenses are expected to exceed 20 percent of their family income, or they have Healthy Families coverage. Some families pay a fee to receive services.

Included in the CCS program are treatments for eye conditions, including infections and diseases that can result in permanent visual impairment or blindness, conditions that require surgery, and certain congenital eye anomalies.¹⁷ CCS services include diagnosis, medical and surgical treatment, and hospital care.

¹⁵ A co-payment is not required for medically necessary contact lenses. Families who wish to obtain elective contact lenses for their children receive a limited allowance from the program to cover the cost of the examination, contact lens evaluation, fitting costs, and materials.

¹⁶ The 18 counties are Alameda, Fresno, Kern, Los Angeles, Napa, Riverside, San Bernardino, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Sonoma, Tulare, and Yolo.

¹⁷ For example, eye conditions that may make a child medically eligible for the CCS program include strabismus, keratitis, cataract, glaucoma, retinal detachment, optic neuritis, lens dislocation, and ptosis.

California's Vision Screening Requirements

California requires vision screenings for children entering and enrolled in schools, although parents may decline to have their children tested. California also requires certain local entities to identify and assess children, including infants and preschool-age children, for vision impairments to determine if a child qualifies for special education services.

School Entry Requirements

Current state law requires school districts to exclude from school, for a maximum of five days, any child entering the first grade who fails to provide documentation that the child has received specified health screenings and evaluation services—including vision screening—within the past 18 months.¹⁸ Furthermore, California requires each child who is entering the first grade and is eligible for the CHDP program to provide documentation to the school that he or she has received health screenings and evaluation services, including vision screening, within the past 18 months.

Requirements for School Districts to Provide Vision Screening

Each California school district (with the exception of private schools) must provide vision screenings for its enrolled students, including children who have enrolled at an elementary school for the first time and at least every third year thereafter until the eighth grade is completed. The screenings must check for visual acuity from a distance and color vision.¹⁹ Parents may waive the

¹⁸ School districts may grant exemptions from exclusions, not to exceed 5 percent of a school district's first-grade enrollment. Required health screenings and evaluation services must meet criteria included in the statute governing the CHDP program. A child's parents may sign a waiver indicating they do not want or are unable to obtain services for their child.

¹⁹ Current law requires school districts to test for color vision once and with male children only.

screening requirements by documenting that a physician or optometrist already has determined their child's visual acuity and/or color vision.²⁰

If a student fails a visual acuity screen, the school district must provide another test. If the student fails a second time, the school district must report the vision problem to the parent and advise the parent to take actions to correct the problem.²¹ The state does not require parents to report back to the school district whether the child received the recommended follow-up care.

The state also requires school district teachers to continuously look for vision problems by observing the behavior and listening to the complaints of students.

A Look at Other State Requirements

In an effort to increase the number of school-age children who receive eye examinations, some states have passed laws that go beyond the scope of California's existing vision screening requirements. Here are two examples:

- **Massachusetts' Law Requiring Follow-Up Care**

The state of Massachusetts requires proof of an eye examination by an optometrist or ophthalmologist for children who fail a school vision screening or are diagnosed with neurodevelopmental delay. The proof must include any pertinent diagnosis, treatment, and prognosis. The person conducting the eye examination also must report to the school what recommendations have been made for adjustments that would affect classroom learning, such as glasses for the child or adjusting the student's classroom seating arrangement.

- **Kentucky's Requirement for Children's Eye Exams**

As of July 15, 2000, Kentucky required all children entering public preschool, Head Start, or public school for the first time to have an eye examination by an optometrist or ophthalmologist. This governing law does not impose penalties on parents for noncompliance. The law sets aside funds to assist low-income parents with the cost of their child's eye examination.

²⁰ School districts do not have to provide vision screenings for children whose parents provide a written statement declining a screening because of religious beliefs.

²¹ Failing the color vision test does not require a referral to follow-up services by an eye care specialist.

Vision Assessments for Special Education

California requires each school district, special education local plan area, or county office of education to identify and assess children with special needs and plan for an instructional program that addresses the child's assessed needs.²² These local entities must develop procedures for identifying children with special needs, including infants and children with vision impairments.

Students may be eligible for special education services if they have a visual impairment that—even with correction—adversely affects their educational performance.²³ A visual impairment does not include visual problems resulting solely from a learning disability.²⁴

Vision Screening Requirements Are Not Designed to Identify All Eye and Vision Problems in Children

California's vision screening requirements for children are not designed to identify all eye and vision problems because:

- California requires routine vision screenings for school-age children, but not for infants or preschool-age children.
- School vision screenings only are required to test for color vision in males and far-distance vision for all children, but not for other eye or vision problems, such as near-distance vision.
- If a student fails the school's vision screening test, the school district must advise the parents on corrective actions. However, the state does not require parents to report to the school district the results of any follow-up care.²⁵

²² The plan could include an individualized education program (IEP).

²³ Visual impairments could result, for example, from keratoconus, irregular astigmatism, aniridia, or cataracts.

²⁴ Learning disabilities (such as dyslexia) would not be categorized as a visual impairment.

²⁵ There is limited data on the proportion of parents who obtain follow-up care after an abnormal vision screening. One study of Michigan children found that nearly one-quarter of those whose parents were notified of an abnormal vision screening did not receive recommended follow-up care. See Alex R. Kemper and others, "Hearing and Vision Screening Program for School-Aged Children," *American Journal of Preventive Medicine*, vol. 26, no. 2 (2004), p. 141-146. Another study of children in Baltimore, Maryland, found that nearly two-thirds had not received recommended follow-up care resulting from a school vision screening. See Mark W. Preslan and Audrey Novak, "Baltimore Vision Screening Project, Phase 2," *Ophthalmology*, vol. 105 (1998), p. 150-153.

Access to Health Coverage for Eye and Vision Care

Many children do not have health coverage for vision benefits and therefore may have difficulty accessing services, such as eye examinations.²⁶ About 1.1 million out of California's 10 million children had been uninsured part or all of the year in 2003, and thus had no coverage for vision benefits.²⁷ Of the nearly 9 million children who had health coverage, about 1.2 million did not have vision benefits for eye examinations and 1.9 million did not have vision benefits for glasses.²⁸

Eligibility of Uninsured Children for Public Health Coverage

Nearly six in 10 children without any health coverage may be eligible for, but not enrolled in, public health coverage programs that provide vision benefits, such as Medi-Cal. Among uninsured children in 2003, 204,000 were eligible for Medi-Cal, 225,000 were eligible for Healthy Families, and another 45,000 were eligible for county health coverage programs.²⁹ In recent years California has implemented policies aimed at improving the enrollment process for these programs, however, some argue that the process still presents barriers for some eligible children.

²⁶ Alex R. Kemper and others, "Receipt of Specialty Eye Care by Children," *Ambulatory Pediatrics*, vol. 3, no. 5 (2003), p. 270-274. This study found that among children with family incomes above 200 percent of the FPL, uninsured children had lower odds of receiving eye care than children with public or private health coverage.

²⁷ UCLA Center for Health Policy Research, 2003 California Health Interview Survey. The survey also found that 779,000 California children did not have any health coverage when the survey was conducted.

²⁸ Ibid.

²⁹ E. Richard Brown and Shana Alex Lavarreda, "Children's Insurance Coverage Increases as Result of Public Program Expansion," UCLA Center for Health Policy Research (December 2004).

Eye Appliances Available Through Public Health Coverage Programs

The coverage for eye appliances varies among public health coverage programs. For example, while Healthy Families provides glasses once every 12 months, Medi-Cal provides glasses once every two years. Healthy Families does not cover repair or replacement of broken or lost glasses, but Medi-Cal covers these costs under certain circumstances.³⁰

³⁰ The family must provide a signed statement that explains how the eye appliance was lost or broken and steps taken to recover a lost item and that certifies the loss or damage was beyond the child's control.

Outreach and Assistance for Public Eye and Vision Care

Some agencies provide limited outreach and assistance to families in need of vision and eye care services. School districts provide information to families regarding CHDP health screenings and evaluation services. Families also may receive referrals to services from school districts, state-subsidized child care and development programs, and the CHDP program.

School Districts

State law requires school districts and private schools to provide information to parents of all children enrolled in kindergarten about the CHDP program. This helps notify parents of children in low-income families about the availability of CHDP health screenings and evaluation services. In addition school districts make referrals to follow-up care if a child fails a vision screening. The school district may recommend that the child be taken to a public clinic or diagnostic and treatment center operated by a public hospital or by a state, county, or city department of public health. Under current law the school may not recommend a particular individual or class of practitioner for purposes of correcting a vision problem.

Once a referral is made, the California Department of Education recommends that school districts maintain contact with the parents until the student has received the necessary eye examinations or care. It also recommends that school districts refer parents in need of financial assistance to one of the following sources:

- county health and human services agency for Temporary Assistance for Needy Families;³¹
- Lions Club or another fraternal organization;
- Parent Teacher Association (PTA) or another service organization;
- California Children’s Services program;
- vision care plans;
- Child Health and Disability Prevention program;
- Healthy Families or Medi-Cal.

State-Subsidized Child Care and Development Programs

Currently state-subsidized child care and development programs that contract with the state must:

- identify the needs of a child and his or her family for health or social services;
- refer a child and/or the family to appropriate agencies in the community based on health or social services needs;
- follow-up with a parent to ensure that the needs have been met.

³¹ Counties administer the California Work Opportunity and Responsibility to Kids (CalWORKs) program under the federal Temporary Assistance for Needy Families block grant. CalWORKs provides time-limited cash assistance, employment services, and support services for low-income families.

State-Subsidized Programs

The California Department of Education administers child care and development programs for low-income families. For example, state preschool programs provide developmental programs for children ages three to five.

Child care services may be provided in a center (center-based) or family home setting. Child care centers and homes licensed by the state must document that all children being cared for have received immunizations.³² In addition, licensed child care centers must obtain a licensed physician's written medical assessment of each child when the child is enrolled.³³

Child Health and Disability Prevention

California requires that CHDP programs provide outreach and assistance services, including:

- outreach and educational services;
- referrals for diagnosis and treatment, and methods for ensuring that a referral is carried out;
- assistance with transportation and scheduling appointments for diagnosis and treatment services for children eligible for Medi-Cal.

³² Documentation for immunizations is not required for children who also are enrolled in an elementary school.

³³ Medical assessments are not required for children who also are enrolled in an elementary school.

Policy Steps to Consider

Developing policy options for improving the identification and treatment of eye and vision problems among California children is difficult since limited data and research do not allow for a comprehensive needs assessment. Furthermore, eye and vision professionals differ in their recommendations of what is appropriate testing for children. However, there are some incremental steps the Legislature and state departments could consider to improve current policies, including:

- **Require state-subsidized center-based child care and development programs to provide information to parents about the Child Health and Disability Prevention (CHDP) program.**

Providing more outreach about the CHDP program's availability could help increase the number of children, especially preschool-age children, who receive routine CHDP vision screenings. A similar requirement already exists for school districts to inform parents of all kindergarten children about this program. Many low-income children enrolled in a state-subsidized child care and development program may be eligible for the CHDP program. The state already requires center-based child care and development programs to refer families to appropriate agencies based on identified health needs.

- **Convene a group of stakeholders to review school vision-screening requirements and make recommendations for improvements.³⁴**

³⁴ Legislation was recently enacted (Assembly Concurrent Resolution No. 145, Resolution Chapter 108, Statutes of 2006, Nakanishi) that would establish a panel to study and recommend improvements to existing vision screening and appraisal requirements for children upon school enrollment or upon entering the first grade.

The state could explore options for improving the effectiveness of school vision screenings to help identify children with eye and vision problems. The state enacted the current school vision-screening laws in the 1970s. Since then, there has been new research and technology related to the testing of children's vision.³⁵ Although state guidelines include suggested vision screening procedures that reflect more current knowledge, state laws and regulations have not been updated since the 1970s. The stakeholder group could, for example, examine the costs, benefits, and feasibility of:

- ♦ screening children for other eye and vision problems;³⁶
- ♦ improving the process of following up on those children who need more care and have been given referrals.

Members of the stakeholder group could include individuals from the state Department of Education, Department of Health Services, and school districts, as well as school nurses and eye care professionals, among others.

■ **Require school districts to provide information to parents about the limited scope of vision screenings.**

Providing this information could increase awareness among parents that a school vision screening does not take the place of an eye examination.³⁷ Current state guidelines include procedures to inform parents that passing a school vision test does not replace a full eye examination (as it does not identify all vision problems), yet these parental-notification procedures currently are optional for school districts. The state could

³⁵ Example: Research on vision screening methods and screener qualifications for testing five-year-olds has been conducted recently. See the Vision in Preschoolers Study, "Comparison of Preschool Vision Screening Test as Administered by Licensed Eye Care Professionals in the Vision in Preschoolers Study," *Ophthalmology*, vol. 111, no. 4 (April 2004), p. 637-650, and the Vision in Preschoolers Study Group, "Preschool Vision Screening Tests Administered by Nurse Screeners Compared with Lay Screeners in the Vision in Preschoolers Study," *Investigative Ophthalmology and Visual Science*, vol. 46, no. 8 (August 2005), p. 2,639-2,648.

³⁶ Example: Screening children who have difficulty reading for near-distance vision could be explored.

³⁷ See Vision Service Plan, "Children's Vision Awareness Study" (April 4, 2002). This survey of parents of children age 12 and under found that 48 percent of the parents had not taken their child to an optometrist or ophthalmologist. Among the reasons: 25 percent said their child received an examination at school.

develop information, such as brochures, for school districts to distribute to parents.

- **Require school districts to inform parents of children who need follow-up care about the availability of the Medi-Cal and Healthy Families programs.**

Offering information to parents about these programs could help low-income families access services for children referred to follow-up care. Currently state guidelines recommend but do not require school districts to refer parents who need financial assistance to programs such as Medi-Cal and Healthy Families. One option: Explore adding to the existing form, “Report of School Vision Test,” information about the Medi-Cal and Healthy Families programs and how families who need financial assistance can access them (see appendix E on page 65).

- **Increase outreach to families enrolled in Medi-Cal and Healthy Families about the availability of vision benefits.**

Increasing outreach efforts could help families access Medi-Cal’s and Healthy Families’ eye and vision care services. For example, the Medi-Cal program provides dental outreach services to help ensure that enrollees are aware of Medi-Cal’s dental benefits. The state could consider developing similar outreach services for vision benefits through public health coverage programs.

- **Require Healthy Families to determine the feasibility of including the repair or replacement of glasses as a covered vision benefit.**

Low-income families may not be able to afford the repair or replacement of damaged or lost glasses for their children. While Medi-Cal covers these costs under certain circumstances, Healthy Families does not. The Healthy Families program could examine the feasibility of this option, based on the Medi-Cal program’s experiences.

Glossary

Amblyopia: Dimness of sight, especially in one eye, without apparent change in the eye structure. Also called lazy eye.

Aniridia: Absence or defect of the iris.

Astigmatism: A defect causing rays from a point to fail to meet in a focal point, resulting in a blurred and imperfect image.

Cataract: A clouding of the eye's lens or its surrounding transparent membrane that obstructs the passage of light.

Cornea: The transparent part of the coating around the eyeball that covers the iris and pupil and admits light to the eye's interior.

Esotropia: Strabismus in which the eye turns inward toward the nose.

Exotropia: Strabismus in which the eye turns outward away from the nose.

Glaucoma: An eye disease marked by increased pressure within the eyeball.

Keratitis: Inflammation of the cornea.

Keratoconus: Cone-shaped protrusion of the cornea.

Myopia: Nearsightedness.

Ophthalmologist: A medical doctor specializing in the diagnosis and treatment of vision defects and diseases of the eye who performs surgery and prescribes glasses, contact lenses, and other corrective measures.

Optic Neuritis: Inflammation of the optic nerve.

Optometrist: An eye care professional licensed to examine eyes and vision, prescribe glasses and contact lenses, and diagnose and treat diseases of the eye.

Optotype: Figures or letters of different sizes used to test vision.

Ptosis: A drooping of the upper eyelid.

Refractive Error: An eye defect that prevents light rays from being brought to a single focus on the retina. Includes nearsightedness and farsightedness.

Retina: The part of the eye that receives the image formed by the lens and converts it into signals that reach the brain via the optic nerve.

Retrolental Fibroplasia: A disorder occurring in premature infants characterized by an opaque fibrous membrane behind the lens of each eye.

Strabismus: Failure of the two eyes to direct their gaze at the same object because of an imbalance of the eyeballs' muscles.

APPENDIX A

Public Data

School Districts

Program data from 10 school districts shows the number of children who received vision screenings in 2003–04 (Table 1).³⁸ The 10 school districts only include 15.7 percent of the state’s enrollment of children in kindergarten through grade 12. The percentage of enrolled children who received vision screening ranged from 29.1 to 56.5 percent.

Table 1: Children Who Received Vision Screenings Through School Districts, 2003–04			
School District	School District Enrollment	Number of Children Who Received Vision Screenings	Percentage of Enrolled Children Who Received Vision Screenings
Anaheim Union High	32,468	10,528	32.4%
Folsom–Cordova Unified	18,041	7,277	40.3%
Los Angeles Unified	747,009	332,919	44.6%
Lucia Mar Unified	10,856	5,104	47.0%
Modesto City Elementary and Modesto City High	34,384	16,385	47.7%
Murrieta Valley Unified	17,480	5,861	33.5%
Pomona Unified	35,412	19,996	56.5%
San Juan Unified	50,906	14,791	29.1%
Stockton Unified	39,483	19,504	49.4%
Total	986,039	432,365	43.8%

Source: School district enrollment data from California Department of Education. Data on number of children screened from individual school districts.

Note: Anaheim Union High School District only enrolls children in grades seven through 12. Does not include data for color vision screenings.

Program data from the same 10 school districts shows the number of children referred to follow-up care as a result of their vision screenings in 2003–04 (Table 2). The percentage of children screened who were referred to follow-up care ranged from 6.3 to 17.9 percent.

³⁸ The Senate Office of Research surveyed 10 school districts. Currently there is no statewide data on school district vision screenings.

Table 2: Children Referred by School Districts to Follow-Up Care, 2003–04			
School District	Children Receiving Vision Screenings	Children Referred to Follow-Up Care	Percentage of Children Receiving Vision Screenings Referred to Follow-Up Care
Anaheim Union High	10,528	1,763	16.7%
Folsom–Cordova Unified	7,277	1,167	16.0%
Los Angeles Unified	332,919	59,756	17.9%
Lucia Mar Unified	5,104	483	9.5%
Modesto City Elementary and Modesto City High	16,385	1,560	9.5%
Murrieta Valley Unified	5,861	372	6.3%
Pomona Unified	19,996	2,423	12.1%
San Juan Unified	14,791	2,294	15.5%
Stockton Unified	19,504	1,476	7.6%
Total	432,365	71,294	16.5%

Source: Data from individual school districts.

Note: Anaheim Union High School District only enrolls children in grades seven through 12.
Does not include data for color vision screenings.

Program data from nine school districts shows the number of children who reported receiving follow-up care as a result of vision screening referrals in 2003-04 (Table 3). Current law does not require parents to inform school districts whether a child received the recommended follow-up care; therefore, the data undercounts the number of children who actually received follow-up care. The nine school districts include only 15.1 percent of the state's enrollment of children in kindergarten through grade 12. The percentage of children referred to follow-up care who reported receiving care ranged from 21.3 to 68.1 percent.

Table 3: Children Referred by School Districts to Follow-Up Care, 2003–04			
School District	Children Referred to Follow-Up Care	Children Who Reported Receiving Follow-Up Care	Percentage of Children Referred to Follow-Up Care Who Reported Receiving Follow-Up Care
Folsom–Cordova Unified	1,167	282	24.2%
Los Angeles Unified	59,756	23,925	40.0%
Lucia Mar Unified	483	262	54.2%
Modesto City Elementary and Modesto City High	1,560	882	56.5%
Murrieta Valley Unified	372	186	50.0%
Pomona Unified	2,423	1,650	68.1%
San Juan Unified	2,294	488	21.3%
Stockton Unified	1,476	810	54.9%
Total	69,531	28,485	41.0%

Source: Data from individual school districts.

Note: Does not include data for color vision screenings.

Special Education

Children and young adults enrolled in special education due to visual impairments include individuals with partial vision and those who are blind.³⁹ As of December 1, 2004, 4,798 individuals—or about 4 per 10,000—were enrolled in special education due to visual impairments (Table 4).⁴⁰

³⁹ The California Department of Education data shows enrollment in special education by “primary disability category.” Visual impairment is one primary disability category. Other primary disability categories, such as deaf-blindness or multiple disabilities, also may include children with a visual impairment.

⁴⁰ Department of Finance and California Department of Education. “Special Education Enrollment by Age and Disability, Statewide Report, Reporting Cycle December 1, 2004.”

Table 4: Special Education Enrollment Due to Visual Impairment, December 1, 2004			
Age	Enrollment	Age	Enrollment
Less than 1	46	12	327
1	140	13	330
2	181	14	342
3	136	15	272
4	172	16	271
5	205	17	292
6	250	18	134
7	269	19	87
8	274	20	60
9	303	21	57
10	312	22	8
11	330	Total	4,798

Source: California Department of Education.

Child Health and Disability Prevention

The Department of Health Services estimated a target population of nearly 5 million California children and young adults for the CHDP program between July 2002 and June 2003. During this period the CHDP program served 2.1 million individuals; 791,224 of them received vision screenings (Table 5).⁴¹ Of those who received vision screenings, about one in 15 were referred to follow-up care.⁴² School-age children experienced a higher rate of referral to follow-up care compared to infants and preschool-age children.

⁴¹ California Department of Health Services. "Child Health and Disability Prevention (CHDP) Program Annual Report, Fiscal Year 2002–2003" (October 2005), p. VIII and 18.

⁴² California Department of Health Services. "Child Health and Disability Prevention (CHDP) Program Annual Report, Fiscal Year 2002–2003" (October 2005), p.18.

Table 5: Child Health and Disability Prevention Referrals to Follow-Up Care, July 2002–June 2003			
Age	Children Who Received Vision Screenings	Children Referred to Follow-Up Care	Percentage of Children Who Received Vision Screenings Referred to Follow-Up Care
Less than 1	9,625	170	1.8%
1	6,990	179	2.6%
2	5,556	182	3.3%
3	60,715	2,138	3.5%
4	114,818	4,322	3.8%
5	81,799	4,042	4.9%
6	72,087	5,149	7.1%
7	48,286	4,254	8.8%
8	43,325	3,812	8.8%
9	42,779	3,812	8.9%
10	43,271	3,784	8.7%
11	48,908	4,054	8.3%
12	48,144	3,936	8.2%
13	34,948	2,862	8.2%
14	35,387	2,912	8.2%
15	31,940	2,647	8.3%
16	27,809	2,304	8.3%
17	22,786	1,983	8.7%
18	8,847	792	9.0%
19	1,555	114	7.3%
20	1,407	82	5.8%
Unknown	242	16	6.6%
Total	791,224	53,546	6.8%

Source: California Department of Health Services.

Medi-Cal

In 2004 there were approximately 1.1 million children enrolled in Medi-Cal's fee-for-service system.⁴³ During this year there were 88,721 fee-for-service claims for eye examinations for children.⁴⁴ The number of eye examination claims as a proportion of the children enrolled in the Medi-Cal fee-for-service system was 7.9 percent in 2004.

In 2003–04 Medi-Cal provided 233,746 pairs of glasses to children (Table 6).⁴⁵

Table 6: Number of Glasses Provided through Medi-Cal, 2003–04			
Age	Number of Glasses	Age	Number of Glasses
Less than 1	1,692	10	20,413
1	345	11	19,816
2	315	12	19,836
3	981	13	19,015
4	4,434	14	17,410
5	8,067	15	16,809
6	11,558	16	15,702
7	14,866	17	14,634
8	17,070	18	11,568
9	19,215	Total	233,746

Source: California Department of Health Services.

Medi-Cal fee-for-service data also shows the number of children who received low vision services,⁴⁶ contact lenses, and prosthetic eyes (Table 7).

⁴³ A Senate Office of Research analysis of Department of Health Services data. There were approximately 2.1 million additional children enrolled in Medi-Cal's managed care system in 2004.

⁴⁴ California Department of Health Services. These claims cover eye examinations conducted by an optometrist or ophthalmologist. Data for Medi-Cal vision screenings performed by CHDP providers is not included. Data for eye examinations provided to children enrolled in the Medi-Cal managed care system is not included.

⁴⁵ California Department of Health Services. Data includes the number of glasses provided through both Medi-Cal fee-for-service and Medi-Cal managed care systems.

⁴⁶ Low vision services include evaluation and fitting and dispensing low vision aids, such as magnifiers.

Table 7: Children Receiving Certain Medi-Cal (Fee-for-Service) Vision Benefits, 2003–04	
Eye and Vision Benefit	Number of Children
Low Vision Services	277
Contacts	169
Prosthetic Eyes	306
Total	752

Source: California Department of Health Services.

Healthy Families

Between May 2004 and April 2005 there was an average of 693,640 children enrolled in the Healthy Families program each month.⁴⁷ During this period there were 171,040 claims for eye examinations.⁴⁸ The number of eye examination claims as a proportion of the average monthly number of children enrolled in Healthy Families between May 2004 and April 2005 was 24.7 percent.

During May 2004 and April 2005 there were 123,632 claims for frames, lenses, and contacts (Table 8).⁴⁹ The number of these claims as a proportion of the average monthly number of children enrolled in Healthy Families during this same period was 17.8 percent.

⁴⁷ Senate Office of Research analysis of Managed Risk Medical Insurance Board data.

⁴⁸ Managed Risk Medical Insurance Board.

⁴⁹ Ibid.

Table 8: Healthy Families Program Claims for Certain Eye Appliances, May 2004–April 2005	
Eye Appliance	Number of Claims
Frames and Lenses	109,970
Contacts	9,948
Frames Only	840
Lenses Only	2,874
Total	123,632

Source: Managed Risk Medical Insurance Board.

California Children's Services

There were 4,170 children enrolled in the California Children's Services (CCS) program with diagnoses for serious eye and vision problems, based on data from 55 counties as of June 7, 2005.⁵⁰ There were 380 different diagnoses for serious eye conditions.

Data from the 55 counties shows that the commonly diagnosed eye conditions included unspecified esotropia, unspecified exotropia, retrolental fibroplasia, unspecified congenital cataract, and unspecified ptosis of the eyelid (Table 9).⁵¹

⁵⁰ California Department of Health Services. Does not include data for Los Angeles, Orange, and Sacramento counties.

⁵¹ California Department of Health Services. Does not include data for Los Angeles, Orange, and Sacramento counties.

Table 9: Commonly Diagnosed Eye Conditions Among the CCS Caseload, June 7, 2005					
NUMBER OF CHILDREN WITH DIAGNOSIS					
Age	Esotropia, Unspecified	Exotropia, Unspecified	Retrolental Fibroplasia	Congenital Cataract, Unspecified	Ptosis of Eyelid, Unspecified
Less than 1	0	0	12	6	0
1	13	2	72	19	7
2	21	7	50	17	13
3	45	19	33	16	11
4	52	16	25	14	13
5	40	23	16	0	19
6	55	28	7	10	8
7	51	29	6	10	13
8	52	22	3	13	11
9	45	22	3	8	9
10	19	15	1	9	7
11	19	15	0	7	7
12	24	15	1	11	8
13	20	11	1	8	8
14	10	11	2	8	5
15	16	17	0	2	6
16	13	12	2	7	2
17	13	9	1	7	3
18	9	4	0	5	2
19	4	0	0	2	2
20	3	2	0	5	2
21	5	0	0	0	0
Total	529	279	235	184	156

Source: California Department of Health Services.

Note: Does not include data for Los Angeles, Orange, and Sacramento counties.

APPENDIX B

State Requirements for Vision Screening Procedures in School Districts

TITLE 5. Education

Division 1. California Department of Education

Chapter 2. Pupils

Subchapter 3. Health and Safety of Pupils

Article 4. Vision Testing

§594. Test of Visual Acuity.

§594. Test of Visual Acuity.

(a) The test of visual acuity administered pursuant to Education Code sections 49452 and 49455 shall mean a test for visual acuity at the far point. This shall be conducted by means of an optotype test. Test failure for the visual acuity test shall be defined as follows:

(1) For children under six years of age: Visual acuity of 20/50 or worse. The designation 20/50 or worse indicates the inability to identify accurately the majority of letters or symbols on the 20-foot line of the test chart at a distance of 10 feet.

(2) For children six years of age or older: Visual acuity of 20/40 or worse. This means the inability to identify the majority of letters or symbols on 15-foot line of the chart at a distance of 10 feet.

(3) For all children: A difference of visual acuity between the two eyes of two lines or more on the optotype chart.

(b) For pupils who, because of age or special needs are not able to be tested with an optotype test, other types of vision testing, such as a functional vision test, may be utilized, using procedures and criteria of failure as described by the manufacturer.

(c) If a pupil fails a vision test that is conducted by an employee authorized to give vision tests pursuant to subdivision (b) of Section 591, a reevaluation shall be conducted prior to a report being made to the pupil's parent or guardian. This reevaluation shall be conducted by an employee authorized to give vision tests pursuant to subdivision (a) of Section 591.

(d) If a pupil fails a vision test conducted by an employee authorized to give vision tests pursuant to subdivision (a) of Section 591, a report shall be made to the pupil's parent or guardian as required by Education Code Section 49456.

NOTE

Authority cited: Section 33031, Education Code. Reference: Sections 3308.5, 49452, 49455 and 49456, Education Code.

HISTORY

1. New section filed 1-19-73; effective thirtieth day thereafter (Register 73, No. 3).
2. Amendment filed 5-21-75; effective thirtieth day thereafter (Register 75, No. 21).
3. Amendment of Section and repealer of NOTE filed 9-23-77; effective thirtieth day thereafter (Register 77, No. 39).
4. Amendment of section heading and section and new Note filed 8-9-2004; operative 8-9-2004 pursuant to Government Code section 11343.4 (Register 2004, No. 33).

§595. Appraisal of Color Vision.

The appraisal of color vision in male pupils pursuant to Education Code sections 49452 and 49455 shall mean a test employing pseudoisochromatic plates. Procedures and criteria of failure as described by the manufacturer shall be used.

NOTE

Authority cited: Section 33031, Education Code. Reference: Sections 49452 and 49455, Education Code.

HISTORY

1. New section filed 1-19-73; effective thirtieth day thereafter (Register 73, No. 3).
2. Amendment filed 9-23-77; effective thirtieth day thereafter (Register 77, No. 39).
3. Amendment of section heading and section and new Note filed 8-9-2004; operative 8-9-2004 pursuant to Government Code section 11343.4 (Register 2004, No. 33).

APPENDIX C

**State of California, Department of Health Services,
Child Health and Disability Prevention Provider
Information Notice No. 02-10: “Recommendations
for Vision Screening”**

(December 20, 2002)



California
Department of
Health Services

DIANA M. BONTÁ, R.N., DR P.H.
Director

State of California
Department of Health Services



GRAY DAVIS
Governor

December 20, 2002

CHDP Provider Information Notice No.: 02-10

TO: ALL CHILD HEALTH AND DISABILITY PREVENTION (CHDP)
PROGRAM PROVIDERS

SUBJECT: RECOMMENDATIONS FOR VISION SCREENING

The purpose of this notice is to provide you with information about the importance of completing a red reflex examination in all newborns. Attached is a copy of the American Academy of Pediatrics (AAP) policy on "Red Reflex Examination in Infants" issued in May 2002.

The Vision Screening guidelines (Section 601) in the CHDP Health Assessment Guidelines have been revised to reference the AAP policy. The updated guidelines also clarify the recommendation for the use of a standardized chart, such as the Snellen or equivalent, to test visual acuity starting at three years of age. Please update your copy of the Health Assessment Guidelines with the enclosed replacement pages.

If you have any questions, please contact your local CHDP Program.

Original Signed by Maridee Gregory, M.D.

Maridee A. Gregory, M.D., Chief
Children's Medical Services Branch

Enclosures



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Children's Medical Services Branch
714/744 P Street, P.O. Box 942732, Sacramento, CA 94234-7320
(916) 327-1400
Internet Address: <http://www.dhs.ca.gov/pcfh/cms>

VISION SCREENING

SCREENING REQUIREMENTS

Screen for visual problems at each health assessment visit. See Table 601.1

Include in the Vision Screening:

- Patient and family history of visual difficulties or ocular pathology, such as tumors or cataracts.
- Inspection of the external eye.
- Ophthalmoscopic visualization of the lens (red reflex) and fundoscopic examination.
- Pupillary reaction to light and accommodation.
- Cover-uncover test.
- Hirschberg's test (corneal light reflex).

Test for visual acuity using a standardized chart, such as the Snellen or equivalent, at each health assessment visit starting at age three years.

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

Treat or refer any eye conditions to a medical specialist.

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

- A possible vision problem according to history or clinical observation.
- Any abnormalities as observed by the corneal light reflex test, cover test, or ophthalmoscopic exam.
- A visual acuity of 20/50 or poorer in either eye using a standardized chart, such as the Snellen or equivalent, for children age three through five years.
- A two line difference in visual acuity between the eyes on a standardized chart, such as the Snellen or equivalent.
- A visual acuity of 20/40 or poorer in either eye using a standardized chart, such as the Snellen or equivalent, for children age six years and older.
- All children who are not testable because of special medical problems or who are developmentally delayed.

RATIONALE

Early detection of strabismus and prevention of amblyopia is of primary importance. Refractive errors are the most common ophthalmologic disorders in children. These errors occur in approximately 20 percent of children by age 16 years. Strabismus occurs in two percent of children and is one of the primary causes of amblyopia or "lazy eye." While the risk of amblyopia is greatest for children during their first three years of life, the potential exists until children complete their visual development at approximately age nine years. Left untreated, amblyopia may lead to irreversible visual deficits. Other potential ophthalmologic disorders during infancy and childhood include cataracts (1/20,000 live births) and retinopathy of prematurity.

BASICS OF VISION SCREENING PROCEDURES

Examine the red reflex in a darkened room by holding an ophthalmoscope or other light source at a distance of about 12 inches. Look through the ophthalmoscope at each of the child's eyes. Both retinal reflexes should be red or red-orange and of equal intensity.

Conduct the corneal light reflex test in a darkened room by holding the ophthalmoscope or other light source about two feet away from the child's eyes. The corneal light reflections should fall at corresponding points of the child's eyes. If the light reflections fall asymmetrically the eyes are improperly aligned, or strabismic.

Perform the cover-uncover test with children age three years and older. Have the child focus on a stationary object. Then place a hand or cover in front of one eye and observe the other eye. Quickly remove the cover and observe for uncontrolled eye movement in the just uncovered eye. The eye should remain motionless. Repeat the exam with the other eye.

Perform the visual acuity test correctly, using a standardized chart, with children age three years and older. The Snellen E is recommended for children age three to six years and the Snellen Letters are recommended for children over age six years. The distance from the chart to the child can be either 10 feet or 20 feet, depending on whether the screening chart is for the 10 foot or 20 foot distance. Keep the room free of distractions and the eye chart at eye level and illuminated to 10 to 30 foot candles. Measure either the 10 foot or 20 foot distance from the vision screening 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 occluder. Record the line where the child accurately sees one more than one-half of the characters.

It is recommended that the highest cognitive level chart be used for the child. In addition to the Snellen test, there are other tests that can be used. These tests may be useful in testing the vision of children who would otherwise be untestable. The validity and reliability of results, however, may not be as good as with the Snellen E. These tests are The HOTV or Matching Symbol Test, the Lea Symbol Chart, the Faye Symbol Chart, or the Allen Picture Card Test.

**Table 601.1 EYE AND VISION SCREENING
RECOMMENDATIONS FOR PRIMARY CARE PROVIDERS**

Age	Screening Method	Indicators Requiring Further Evaluation
Newborn to 2 months	Red reflex*	Abnormal or asymmetric
	Corneal light reflex	Asymmetric
	Inspection	Structural abnormality
2 months to 3 years	Red reflex	Abnormal or asymmetric
	Corneal light reflex	Asymmetric
	Fundoscopy exam	Any abnormality
	Fix and follow with each eye	Failure to fix and follow
	Inspection	Structural abnormality
3 years through 5 years	Visual acuity	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 refraction movements
	Fundoscopy exam	Any abnormality
	Inspection	Structural abnormality
6 years and older	Visual acuity	20/40 or worse in either eye
	Red reflex	Abnormal or asymmetric
	Corneal light reflex	Asymmetric
	Cover-uncover test	Ocular refraction movements
	Fundoscopy exam	Any abnormality
	Inspection	Structural abnormality

* Refer to American Academy of Pediatrics (AAP) policy statement on Red Reflex Examination in Infants (available in Pediatrics, 109(5), May 2002 or at www.aap.org/policy/060012.html)



Red Reflex Examination in Infants

AMERICAN ACADEMY OF PEDIATRICS

Policy Statement

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

Section on Ophthalmology

ABSTRACT. Red reflex examination is recommended for all infants. This statement describes the indications for and the technique to perform this examination, including indications for dilation of the pupils before examination and indications for referral to an ophthalmologist.

INTRODUCTION

Current American Academy of Pediatrics policy recommends eye examinations for infants and children at specified intervals during their development, including an examination to take place sometime during the first 2 years of life, stating: "Vision screening and eye examination are vital for the detection of conditions that distort or suppress the normal visual image, which may lead to inadequate school performance or, at worst, blindness in children. Retinal abnormalities, cataracts, glaucoma, retinoblastoma, eye muscle imbalances, and systemic disease with ocular manifestations may all be identified by careful examination."¹

The policy further recommends that an eye evaluation for infants and children from birth to 2 years of age include examination of the following:

1. Eyelids and orbits;
2. External structures of the eyes;
3. Motility;
4. Eye muscle balance;
5. Pupils; and
6. Red reflex.

The red reflex test is used to screen for abnormalities of the back of the eye (posterior segment) and opacities in the visual axis, such as a cataract or corneal opacity. An ophthalmoscope held close to the examiner's eye and focused on the pupil is used to view the eyes from 12 to 18 inches away from the subject's eyes. To be considered normal, the red reflex of the 2 eyes should be symmetrical. Dark spots in the red reflex, a blunted red reflex on 1 side, lack of a red reflex, or the presence of a white reflex (retinal reflection) are all indications for referral to an ophthalmologist.

Red Reflex Examination in Infants

Concern has been expressed recently that diagnosis of serious ocular conditions, including retinoblastoma and congenital cataract, in which early treatment is essential for future ocular and systemic health, often is not made sufficiently early to minimize potential consequences of those conditions. This concern has led to consideration of legislation in several states^a mandating early pupil-dilated red reflex examinations in all neonates or very young infants.

Although in infants, pupils are easily dilated using various agents, significant complications have been sporadically reported with all commercially available dilating agents, including sympathomimetic agents like phenylephrine and anticholinergic agents like cyclopentolate hydrochloride and tropicamide. These complications include elevated blood pressure and heart rate,² urticaria,³ cardiac arrhythmias,⁴ and contact dermatitis.^{5,6} However, pupillary dilation has been performed routinely for many years in almost all new patients seen in most pediatric ophthalmology offices, with no complications seen for years at a time, so this procedure appears to be very safe when performed in an office setting on infants older than 2 weeks. Similarly, premature infants' pupils are often dilated in the neonatal intensive care unit without significant complication, so dilation appears to be relatively safe even in very young infants.

The purpose of this policy statement is to suggest a guideline based on current knowledge and experience for examination of the eyes of young infants to minimize the risk of delay in diagnosis of serious vision-threatening or life-threatening disorders.

RECOMMENDATIONS

1. All infants should have an examination of the red reflex of the eyes performed during the first 2 months of life by a pediatrician or other primary care clinician trained in this examination technique. This examination should be performed in a darkened room on an infant with his or her eyes open, preferably voluntarily, using a direct ophthalmoscope held close to the examiner's eye and approximately an arm's length from the infant's eyes.
2. The result of a red reflex examination is to be rated as negative or normal when the reflections of the 2 eyes are equivalent in color, intensity, and clarity and there are no opacities or white spots (leukokoria) within the area of either or both red reflexes.
3. A positive or abnormal result of a red reflex examination (inequality in color, intensity or clarity of the reflection, or the presence of opacities or white spots) should be followed, in a timely fashion, by 1 of 2 actions:
 - a. A red reflex examination preceded by pupil dilation with $\leq 1\%$ tropicamide or a $\leq 1\%$ tropicamide/2.5% phenylephrine mixture or a 0.25% cyclopentolate/2.5% phenylephrine (eyedrop or spray), administered to each eye approximately 15 minutes before this examination.
 - b. Examination by an ophthalmologist experienced in the examination and treatment of the eyes of young infants, including ocular fundus examination, using indirect ophthalmoscopy after pupil dilation.
4. Infants in high-risk categories, including relatives of patients with retinoblastoma, congenital cataract, congenital retinal dysplasia, and other congenital retinal and lenticular disorders should initially have a dilated red reflex examination or examination by an ophthalmologist experienced in the examination and treatment of the eyes of young infants, as described previously (3b).
5. Infants with a history of leukokoria (a white pupillary reflex) in 1 or both eyes noted by parents or other observers or on any physical examination, and those with absence of a red reflex should have an examination by an ophthalmologist experienced in the examination and treatment of the eyes of young infants, as described previously (3b).

RED REFLEX SUBCOMMITTEE

Red Reflex Examination in Infants

*Walter M. Fierston, MD, Chairperson
Allan M. Eisenbaum, MD
Howard L. Freedman, MD
Harold P. Koller, MD

SECTION ON OPHTHALMOLOGY, 2001-2002

Gary T. Denslow, MD, MPH, Chairperson
Steven J. Lichtenstein, MD, Chairperson-Elect
Jay Bernstein, MD
Edward G. Buckley, MD
George S. Ellis, Jr, MD
Gregg T. Lueder, MD
James B. Ruben, MD

CONSULTANT

Michael Redmond, MD

STAFF

Stephanie M. Mucha, MPH

*Lead author

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^aPassed in California and under consideration in New York, Massachusetts, South Carolina, Florida, and New Jersey (at the time of publication).

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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APPENDIX D

Child Health and Disability Prevention Program's Periodicity of Health Assessments (California Administrative Code title 17, § 6847)

TITLE 17. PUBLIC HEALTH
DIVISION 1. STATE DEPARTMENT OF HEALTH SERVICES
CHAPTER 4. PREVENTIVE MEDICAL SERVICE
SUBCHAPTER 13. CHILD HEALTH AND DISABILITY PREVENTION
PROGRAM
ARTICLE 4. REQUIRED SERVICES

§ 6847. Periodicity of Health Assessments.

- (a) Eligibility. Medi-Cal beneficiaries who have received an initial health assessment are also eligible for subsequent, periodic health assessments.
- (b) Notifying and Offering Assistance. Persons eligible for periodic assessments shall be notified before each assessment is due of their entitlement to the assessment, and of the availability of assistance with transportation and scheduling appointments. The informing may be in writing. The response to this offer shall be recorded, and this assistance shall be provided if requested by the beneficiary.
- (c) Frequency. Persons eligible for periodic health assessments shall receive one assessment during each age period listed below. The first age at which the next health assessment is due is the age of the person at the previous assessment plus the interval indicated in the parenthesis after that age period in the table shown in this subsection. However, a periodic assessment may be done at any time from the beginning to the end of each age period. Persons will be considered overdue for an assessment on the first day he or she enters a new age period without assessment having been performed in the previous age period.

For example, a child receiving an assessment at two and one-half years of age is first due for the next assessment at three and one-half years of age (the age at the time of previous assessment, two and one-half plus the time interval between assessments for that age group, one year). The assessment is overdue when the child is four years old. There is no time interval in the 17-20 age period because no additional assessments will be given after that assessment. Initial and periodic assessments, and the initiation of any needed treatment, shall normally be completed within 120 days from either the last day the person is eligible for assessment in any age period or the day the person is notified that the next assessment is due, whichever occurs first.

The following table is a guide for the minimum frequency at which health assessments shall be provided to persons eligible for periodic assessments:

▪ Under 1 month old	(1 month)
▪ 1 through 2 months old	(2 months)
▪ 3 through 4 months old	(2 months)
▪ 5 through 6 months old	(2 months)
▪ 7 through 9 months old	(3 months)
▪ 10 through 12 months old	(3 months)
▪ 13 through 17 months old	(5 months)
▪ 18 through 23 months old	(6 months)
▪ 2 years old	(1 year)
▪ 3 years old	(1 year)
▪ 4 through 5 years old	(2 years)
▪ 6 through 8 years old	(3 years)
▪ 9 through 12 years old	(4 years)
▪ 13 through 16 years old	(4 years)
▪ 17 through 20 years old	

(d) Additional Health Assessments. The frequency indicated in this section is considered a minimum for preventive health care. More frequent health assessments will be reimbursed when the additional assessment is deemed appropriate by the health assessment provider. Circumstances which may indicate the need for more frequent assessments include the following:

1. The parents have or the person has a particular need for education and guidance.
2. There is the presence or possibility of perinatal disorders (such as low birth weight, low Apgar scores at birth, prolonged labor).
3. The person is or will be exposed to a potentially stressful environment—for example, camp or contact sports—before the next periodic health assessment indicated by the periodicity schedule is due.

(e) Limitations. Reimbursement at more frequent intervals will not be made for a health assessment of an individual for the purpose of monitoring or treating a specific disease or disorder previously diagnosed, or for a person whose overall health status requires ongoing treatment care. Such individuals are still eligible for regular assessments if they are otherwise eligible for CHDP services.

APPENDIX E

Report of School Vision Test

Report of School Vision Test

(This form is approved by the State Superintendent of Public Instruction, as required by *Education Code* Section 49456, for reporting results of vision testing to parents and guardians and for obtaining recommendations from the professional examiner.)

Dear Parent/Guardian:

Your child recently received a vision test at school.

The following results were obtained:

Optotype test: right eye 20/____ left eye 20/____

Additional procedures _____

Comments _____

It is recommended that your child's eyes be examined by an eye or vision practitioner.

It is requested that you take this form with you, have it completed by the examiner, and then return it to your school's health office.

Name of school _____

Address _____

Date _____ Grade _____ Teacher _____ Phone _____

(Signature of school nurse)

Report of Vision Test to the School				
Name of student		School	Grade	Date examined
Visual acuity		Lens requirements		
<i>Without lens</i>	<i>With lens</i>	<i>Results</i>	<i>Frequency</i>	
R 20/____	R 20/____	<input type="checkbox"/> Correction not required for right eye	<input type="checkbox"/> Wear at all times	
L 20/____	L 20/____	<input type="checkbox"/> Correction not required for left eye	<input type="checkbox"/> Wear for close work	
		<input type="radio"/> Glasses <input type="radio"/> Contact lens	<input type="radio"/> Wear for distance only	
Diagnosis			Recommendation (special seating, large print, special education placement, etc.)	
Examiner's signature		Address		Phone Number

I give permission to share this information with the school.

(Signature of parent)

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