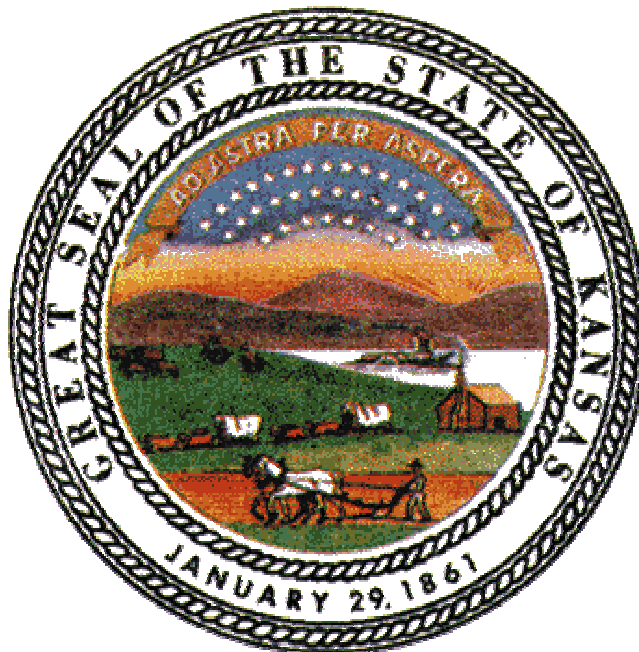


**VISION SCREENING GUIDELINES:  
For  
Infants, Toddlers, Children and Youth**



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# VISION SCREENING GUIDELINES

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## INTRODUCTION

The philosophy for preventive health services is to identify health problems or potential health problems at the earliest possible time, to promote early intervention for those problems, and to promote optimum health in children and youth. Where eye health is concerned, each child should have a complete vision screening prior to age 3 in order to detect potential acuity or oculomotor problems and facilitate effective early treatment through referral and follow-up.

In addition to detecting potential vision problems, vision screening programs are valuable in raising the awareness of parents, teachers, early interventionists, day care providers and the community to the importance of eye care. Another screening benefit is the identification of children who may need special education services because of a visual impairment.

The final but most important aspect of the screening program is follow-up. The child who does not pass the vision screening should receive a professional eye examination. If the children referred do not receive professional attention, the vision screening program has not accomplished its mission. According to the American Optometric Association, a child's first professional eye examination should be scheduled at 6 months of age (or sooner if signs or symptoms warrant). When no abnormalities are detected at this age, the next examination should be scheduled at age 3.<sup>1</sup>

The goals of the Kansas vision screening program are parallel with the philosophy of early identification and intervention. The goals are:

- ◆ Ensure the inclusion of vision screening in all health assessments for children and youth (birth to 21 years).
- ◆ Promote remediation of identified vision problems at the earliest possible time.

### **Objectives of the Kansas vision screening program are to:**

- ◆ Utilize uniform screening guidelines and referral criteria throughout the state.
- ◆ Collaborate on an interagency basis for intervention of identified problems.
- ◆ Follow-up on all referrals where evaluation and/or treatment is recommended.
- ◆ Maintain vision records on children and youth and document vision screening activities.

These guidelines should be utilized for all age children and youth (birth to 21 years) in child health programs including EPSDT (KAN Be Healthy) screening, well child screening, Part C early intervention screening, and school screening. They are designed to be used in conjunction with child health standards of care.

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<sup>1</sup> American Optometric Association, Clinical Practice Guidelines, "Pediatric Eye and Vision Examinations," 2<sup>nd</sup> Edition, April 2002

All vision screeners in child health programs should meet the same standard. The vision screening workshops will focus on skills required for all vision screeners who screen children and youth birth through age 21. Screeners should review the vision screening guidelines periodically to maintain basic proficiency levels. It is each screener's responsibility to attend a workshop when the screener decides it is necessary to be retrained in basic skills. **Exception:** Screeners providing vision screening for Part C Infant-Toddler Services, shall retrain in basic skills every three years.

When following these guidelines, it is understood that:

1. Protocols and pass/fail criteria, as described in the published test by the commercial company, take precedence over directions and pass/fail criteria in the guidelines.
2. Except in unusual circumstances, or when there is an obvious problem needing immediate attention, the vision screener should rescreen failed tests before making a referral.

## **BACKGROUND**

Good vision is essential for proper physical development and educational progress in growing children. The visual system in the young child is not fully mature. Equal input from both eyes is required for proper development of the visual centers in the brain. If a growing child's eye does not provide a clear focused image to the developing brain, then permanent irreversible loss of vision may result.<sup>2</sup>

Eye examination and vision assessment are vital for the detection of conditions that result in blindness, signify serious systemic disease, lead to problems with school performance, or at worst, threaten the child's life. Through careful evaluation of the ocular system, retinal abnormalities, cataracts, glaucoma, retinoblastoma, strabismus, and neurological disorders can be identified, and prompt treatment of these conditions can save a child's vision or even life.<sup>3</sup>

Children at risk for eye problems (e.g., prematurity, family history of congenital cataracts, retinoblastoma, metabolic or genetic diseases,) demonstrate a much higher incidence of vision defects. It is important that this population be included in vision screening programs so learning problems are not compounded.

Color vision problems are usually hereditary. The early detection of color vision problems is important because many toddler, preschool and elementary school games, activities, educational supplies and tasks are color oriented. Color vision problems are not a disease and are not treatable. However, it is important to provide information on color discrimination problems to parents and teachers.

Vision problems generally are not the direct cause of learning disorders; however, they can interfere with children's abilities to perform to their potential.<sup>4</sup> Because children do not complain of visual difficulties, visual acuity measurement (vision screening)<sup>5</sup> plays an important role in identifying potential vision problems and in promoting eye health as early as possible.

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<sup>2</sup> American Academy of Ophthalmology, "Vision Screening for Infants and Children Policy," October 2001.

<sup>3</sup> American Academy of Pediatrics, "Policy Statement", Vol. 111, Number 4, April 2003, pp. 902-907.

<sup>4</sup> American Optometric Association, Clinical Practice Guidelines, "Pediatric Eye and Vision Examinations," 2<sup>nd</sup> Edition, April 2002.

<sup>5</sup> C. Jarvis, *Physical Exam and Health Assessment*, 2<sup>nd</sup> ed., W.B. Sanders, Philadelphia, PA., 1996.

## KANSAS VISION SCREENING LAWS AND REGULATIONS

Kansas schools, including all public, private and parochial schools, are required by law to provide vision screening to school age children at periodic intervals. The laws specifically read as follows:

### **K.S.A.**

#### **Chapter 72.—SCHOOLS**

#### **Article 52.—HEALTH PROGRAMS**

#### **VISION TESTING AND SAFETY**

**72-5204. Definitions.** As used in this act:

- (a) “School board” means the governing body of any school;
- (b) “school” means all elementary and high schools;
- (c) “basic vision screening” means an eye testing program for each child based on a test chart which is graduated as to size of symbols, or the so-called Snellen test, or any other system or method of testing equal thereto or better in the judgment of the school board.

**History:** L. 1959, ch. 310, § 1; June 30.

**72-5205. BASIC VISION SCREENING REQUIRED, exception; eye examination for conditions impairing reading ability.** (a) (1) Each school board shall provide basic vision screening without charge to every pupil enrolled in each school under the governance of such school board not less than once every two (2) years. A teacher shall perform all such tests or some other person designated by the school board. The results of the test and, if necessary, the desirability of examination by a qualified physician, ophthalmologist or optometrist shall be reported to the parents or guardians of such pupils. Information relating to the desirability of examination by a qualified physician, ophthalmologist or optometrist shall not show preference in favor of any such professional person.

(2) The requirements of this subsection shall not apply to a pupil who has had a basic vision screening examination within six months prior to the provision of basic vision screening in the school in which the pupil is enrolled.

(b) Each pupil needing assistance in achieving mastery of basic reading, writing and mathematics skills shall be encouraged to obtain an eye examination by an optometrist or ophthalmologist to determine if the pupil suffers from conditions, which impair the ability to read. Expense for such examination, if not reimbursed through Medicaid, Healthwave, private insurance or other governmental or private program, shall be the responsibility of the pupil’s parent or guardian.

**History:** L. 1959, ch. 310, § 2; L. 2001, ch. 215, § 15; July 1.

**72-5207. Eye protective devices required when participating in certain courses.**

Every student and teacher in all schools, colleges, and universities or other educational institutions participating in any of the following courses:

(A) Vocational, technical or industrial arts shops or laboratories involving experience with:

1. Hot molten metals, or other molten metals;
2. Milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials;
3. Heat treatment, tempering, or kiln firing of any metal or other materials;
4. Gas or electric arc welding, or other forms of welding processes;
5. Repair or servicing of any vehicle;
6. Caustic or explosive materials;

(B) Chemical or combined chemical-physical laboratories involving caustic or explosive chemicals or hot liquids or solids, or injurious radiations, or other hazards not enumerated; is required to wear appropriate industrial quality eye protective devices at all times while participating in such courses or laboratories. Such devices may be furnished for all students and teachers, and shall be furnished for all visitors to such classrooms and laboratories. Such devices may be purchased in large quantities and sold at cost to students and teachers.

“Industrial quality eye protective devices,” as used in this section, means devices meeting the standards of the United States of America standard practice for occupational and educational eye and face protection, Z87.1-1968, promulgated by the American National Standards Institute, Inc.

The provisions of this section shall apply to industrial quality eye protective devices purchased or otherwise obtained for use after the effective date of this act, and shall not have retroactive application to disqualify any such device in use on or before the effective date of this act.

**History:** L. 1967, ch. 408, § 1; L. 1978, ch. 290, § 1; July 1.

**Kansas Department of Health and Environment  
Permanent Administrative Regulations  
Infant and Toddler Program**

**28-4-550. Definitions.**

- (r) “Screening” means a brief procedure administered by qualified personnel to identify a child who needs an evaluation. The five developmental domains to screen are the following:
- (1) Cognitive development
  - (2) Physical development, including health and nutrition, motor, **vision**, and hearing
  - (3) Communication development
  - (4) Social or emotional development
  - (5) Adaptive development.

**28-4-551. Screening activities.**

- (a) Families may choose to have their child evaluated, rather than screened.
- (b) Certain conditions, such as Down Syndrome, indicate the need for evaluation rather than screening.
- (c) Screening shall be available at least monthly.
- (d) Screening may be conducted in places where a child may be found in the course of regular activities, such as a home, child care center, or physician’s office, or at community locations, such as health department, school, or developmental center.
- (e) Written parental consent shall be required before screening.
- (f) Screening shall be conducted by a qualified person or by a qualified multidisciplinary team.
- (g) Screening shall include the five developmental domains.
- (h) Screening shall result in one of three possible outcomes:
- (1) “Pass,” which means that no concerns were identified and the child is developing within normal limits.
  - (2) “Questionable,” which means that the results of the screening process were such that a rescreening is needed within a specified time.
  - (3) “Refer,” which means that concerns were identified and a referral for evaluation shall be made within two working days.

More information about Kansas Part C Infant-Toddler regulations, policies and monitoring standards can be obtained by contacting KDHE Infant-Toddler Services, 785-296-6135 or by calling the Make-A-Difference Information Network, 800-332-6262 (V/TDD).

## **QUALIFICATIONS OF VISION SCREENERS**

The Kansas Department of Health and Environment (KDHE), Bureau for Children, Youth & Families, is the agency which has assumed responsibility for coordination of in-service education, training and periodic updating of information and skills to vision screeners. KDHE assumes the overall responsibility for maintaining quality screening standards. Interagency use of uniform guidelines is a vision screening program goal.

Vision screening shall be provided by qualified persons such as nurses, volunteers or other personnel instructed in proper vision screening methods. The qualified screener will be able to demonstrate the skills necessary to perform the required vision screening tests and all recommended screening tests. The trained screener is able to perform screening tests for all child and adolescent health programs, including infant-toddler (Part C), child and adolescent school vision screens and general well child health assessments. Training is available through the Area Health Education Centers in Kansas as well as select professional health conferences. For training dates contact:

Mary Beth Warren, RN, MS, CPHQ  
Area Health Education Center  
Pittsburg, KS 66762-0296  
Telephone: (620)235-4040  
Fax: (620)235-4041  
Email: [mwarren@mail.pittstate.edu](mailto:mwarren@mail.pittstate.edu)

In Infant-Toddler Part C networks, the individuals providing vision screening for the birth to three years population are required to be trained in vision screening tests and procedures. Trained screeners will be responsible for making referrals based on screening results and the referral criteria stated in this manual. With assistance from a network's Family Services Coordinator(s), screeners will also coordinate follow-up for individual children to access needed services.

The overall supervision of school and health department vision screening programs should be provided by a registered nurse who will utilize professional judgment and direct the application of screening results to referral criteria, and coordinate follow-up for individual children and adolescents to access services needed.

Screening by a qualified physician, ophthalmologist or optometrist is usually not done in an Infant-Toddler Part C, public health or school setting. These vision specialists serve as referral sources to vision service access and as screening consultation support. Screening should not be interpreted as a complete eye examination.

## **PARENT/GUARDIAN CONSENT/REFUSAL FOR SCREENING**

A parent or guardian has the right to refuse screening on children under his/her legal custody. A written, signed statement from the parent/guardian indicating refusal is recommended for school screenings.

The Vision Screening Task Force recommends that school districts inform parents of the vision screening process prior to its occurrence in the school. This information can be provided through the school newsletter, local newspaper or other media, and/or a letter to each student's family. Providing information about an upcoming school-screening program prior to its occurrence gives parents the opportunity to decide whether or not to allow the test to be performed on their children. A form denying permission for vision screening should be included with the letter of explanation of the procedure. If the form is not returned with the parent's or guardian's signature to the school by a designated time, stating the child should not be screened, the child will automatically be screened.

Written, signed parental consent is required for Infant-Toddler Part C screenings. [K.A.R. 28-4-551 (e)]

In the case of provision of EPSDT and well child clinics, vision screening is a portion of the required screening services; thus, the waiver of screening does not apply.

## **REFERRAL AND FOLLOW-UP**

It is important to keep in mind that vision screening is only the first step in identifying those who need a more thorough examination by an ophthalmologist or an optometrist. While this first step is extremely important, it is of limited value unless those who do not pass the screening are followed to ensure that an examination is done and subsequent examination recommendations are followed. A sample form, "Reporting of Vision Screening for Referral to Ophthalmologist or Optometrist" can be found in the Appendix. The form can be used to report a "did not pass" screening. Procuring a professional examination for a child from an ophthalmologist or optometrist is the responsibility of the parent(s) or lawful custodian. Vision screening personnel, with administrative support, should follow up on every vision screening referral to address any barriers to care and assure every child's access to vision service care. Refusal of the parent(s) to take a child for a professional eye examination should be recorded, after verification, on the child's health record. A written statement from the parent(s)/guardian(s) indicating refusal for professional intervention should be included on the child's health record. A sample letter for obtaining feedback on vision referrals is also included in the Appendix. If concluding that the child is in need of care when the parents fail to obtain the needed vision examination, the local agency that provided the vision screening services may apply to a court of competent jurisdiction for an order directing appropriate action. Completion of the vision referral with a professional eye examination or determination of the parent(s)/guardian(s) refusal to secure the examination for their child should occur within one month after the original referral notification is made to the parent(s)/guardian(s).

When vision cannot be corrected to better than 20/70 in either or both eyes, the child should be referred for a school system special education or Part C Infant-Toddler developmental evaluation. Special assistance in either of these settings, with appropriate accommodations for the child's learning, may be warranted.

### **KAN Be Healthy (EPSDT) VISION SCREENING GUIDELINES**

The KAN Be Healthy is a provision of Title XIX of the Social Security Act administered under Centers for Medicare & Medicaid Services (CMS). This program ensures the provision of health care services to prevent and detect health problems for children and adolescents under age 21. Through the Kansas Medicaid program, the KAN Be Healthy Early Periodic Screening, Diagnostic and Treatment (EPSDT) services are to be provided to all children who are eligible for Medicaid and whose families want these services. Children and youth who are eligible for Medicaid should participate in the KAN Be Healthy EPSDT program and receive health checks according to its periodicity schedule.

The periodicity schedule for this program falls within the minimal requirement set by Kansas law for each school board to provide basic vision screening to every pupil enrolled in each school "not less than once every two (2) years". **K.S.A. 72-5205 (a)** states that, "The requirements shall not apply to a pupil who has had a basic vision screening examination within six months prior to the provision of basic vision screening in the school in which the pupil is enrolled."

**Vision screening** is one of the included components of a KAN Be Healthy EPSDT health assessment. The EPSDT vision screening includes: eye tracking evaluation, at each visit, for children under age 3; distance acuity testing using a standardized eye chart for children over age 3; and referral to ophthalmologist or optometrist as indicated. The KAN Be Healthy EPSDT trained nurse, advanced registered nurse practitioner (ARNP), physician assistant (PA), and physicians are to follow the vision screening standards and protocols as described in these guidelines. **Vision services** include diagnosis and treatment for defects in vision, including the provision of eyeglasses. Vision services must be provided according to a distinct periodicity schedule developed by the state and at other intervals as medically necessary.

### **COLLABORATION OF SYSTEMS**

Collaboration with local primary care providers who work with children within existing systems of health care already receiving health screenings is essential to prevent duplication and replication of health screenings and lessen fragmentation of health care for children and adolescents enrolled in those care systems. Likewise, primary care providers within systems of care need assistance with outreach and access to children of families enrolled in their programs to promote utilization of the services offered through their system of care.

School district health staff and Infant-Toddler Part C staff should focus efforts in creating linkages to and supporting existing systems of care and services within each community. Local partnerships can create effective systems, thereby assuring that school boards fulfill statutory screening mandates, that Infant-Toddler Part C regulatory screening requirements are met, and that those systems of care function more effectively. Children thrive and flourish within cooperative communities where articulated systems result from collaborative efforts.

Children who are already being screened and followed within a system of care need not be re-screened. However, the school system and Part C Infant-Toddler are burdened with the duty of assurance that vision screening is completed according to the law. A system for communicating vision screening results to school personnel and Part C personnel must be mutually agreed upon by the agencies in the community serving children and adolescents within Health Insurance Portability and Accountability Act (HIPAA) compliance of those collaborating entities.

All agencies must guard any individually identifiable health information as confidential and only transfer information following informed, signed permission to do so from the parent or guardian or, in the school system, under the pact of an interagency agreement which existence is also communicated to the parent or guardian.

## VISION SCREENING FOR INFANTS AND YOUNG CHILDREN

A number of developmental delays and lifelong disabilities can occur as a result of failure to detect vision problems early in a child's life. Very young children may not report difficulties with vision because they do not know how they are meant to see. Thus, vision screening is undertaken as early as possible to identify children with possible refractive errors (myopia, hyperopia, and astigmatism), muscle imbalance, and other gross abnormalities of the vision system.

Serious visual impairment can often be prevented when problems such as refractive errors and muscle imbalance are detected and corrected during the critical periods of early childhood. For example, amblyopia has a better prognosis if detected and treated prior to age three. Referral of children with suspected amblyopia for a professional eye examination is recommended as soon as possible. Similarly, strabismus is best treated when detection and treatment occur before age three.

A child of any age who does not cooperate during the vision screening should be rescheduled for screening within two weeks. Referral criteria for the vision screening tests are described in the Guidelines and should be followed. **If the young child is unresponsive to vision screening, or if the screener or caregiver has any concerns about the young child's vision, referral should be made for a professional eye examination (a qualified physician, ophthalmologist or optometrist). Re-screening in this situation is not necessary.**

### Birth to Age Three

Vision screening is to be included in any infant-toddler screening program. Vision screening for children birth to age three includes: vision history with a review of risk factors for vision problems; appearance, behaviors and concerns related to the eyes and vision; and specific vision tests selected as a function of age. (See Matrix in these Guidelines, page 13.) A number of vision screening tests can be administered to nonverbal individuals such as infants, toddlers, and older children experiencing delayed language development. These children should be screened annually. Early detection and appropriate intervention are critical to a child's ability to learn.

### Ages 3 to 5

Children ages 3-5 years should be screened with the same tests as those used for 5-7 year old children with the exception of near acuity, and the plus lens test for excessive hyperopia. (See Matrix in these Guidelines, page 13.) Tests recommended for the younger ages (birth – 3 years) should also be administered if the 3-5 year old has never previously been screened for vision or if the 3-5 year old child is unable to respond to age appropriate tests.

### Ages 3 to 8

Children ages 3 to 8, who are officially enrolled in a school program, should be screened annually. Early detection and appropriate intervention are critical to a child's ability to learn.

## **SCREENING OF CHILDREN AND YOUTH WITH DISABILITIES**



The importance of vision screening for children and youth with disabilities cannot be overemphasized. Vision plays a major role in developmental, special education and vocational training programs for these individuals. Since special education services in Kansas are often provided by special education cooperatives, there is occasional confusion as to who should screen individuals receiving special education. Screeners in regular education programs should not assume that the special education students are being screened by the cooperative, and vice versa. Individuals with disabilities are entitled to the same services of vision screening, referral and treatment, as their peers without disabilities. Precautions should be taken to ensure that they are not overlooked.

For those individuals whose mental and/or physical disabilities prevent them from performing standard screening tests, the recommended alternative screening tests should be used. Individuals who are unable to perform on any acuity tests should be referred for a professional eye examination. Once the individual is under the care of a qualified physician, ophthalmologist or optometrist, parents or caregivers should be encouraged to adhere to the schedule of return visits recommended by the eye care specialist. In subsequent years, screening should be attempted and any changes in vision status should be reported to the individual's parent/care giver for forwarding to the child's/youth's eye care specialist.

Children with special needs have a higher percentage of vision problems for refractive errors, eye muscle problems and cataracts, than the general population. The same individuals who are difficult-to-test will probably be difficult-to-examine when referred for professional eye care. Screeners may need to assist the parents in locating a qualified physician, ophthalmologist or optometrist who is willing to examine patients with disabilities. Additionally, screeners can provide suggestions to teachers, parents and other caregivers to prepare children and youth with disabilities for an upcoming eye examination. The screener may also need to provide additional follow-up services for these individuals such as training programs for the wearing and care of glasses. Finally, the optometrist or ophthalmologist may need to explain the results of an eye examination to teachers, parents, and other caregivers so that they can better plan for the developmental and educational needs of individuals with disabilities.

KAN Be Healthy (EPSDT) providers should include vision screening for children and youth with disabilities according to the EPSDT periodicity schedule.

## VISION SCREENING MATRIX

See Pages in Guide	Vision Screening Test	Birth to 6 months	6-18 months	18 months to 3 years	3 to 5 years	5 to 8 years	8 to 21 years
15	Eye Lid Reflex	P					
16	Fixation	P	r	r	r		
17, 18	Risk Factors (checklist)	P	P	P	*	*	*
19	Tracking	P	P	P	r	r	
20	Pupil Response	P	P	P	r	r	r
21	Teller Acuity Cards	O	O	O			
22	Photo Refractor <b>OR</b> 		O	O	O		
23, 24	Corneal Light Reflex 	P	P	P	P	P	
25, 26	ABC's of Vision (checklist)	P	P	P	P	P	P
27	Cover-Uncover Test		P	P	P	r	r
28	Near Point of Convergence		P	P	P	P	r
29	Fusion Test (Worth 4-Dot)			P	P	P	
30, 31	Perception of Depth (Stereopsis) (Titmus Fly <b>or</b> Random Dot E)			P <b>(Use R.D.E. for 30 mos.)</b>	P	P <b>and older)</b>	*
36, 37, 38	Distance (Snellen, E Chart, <b>or</b> HOTV)			P <b>(HOTV or Teller)</b>	X	X	X
39	Color Vision				P	P	*
40	Plus Lens					P	P
41	Near Acuity					P	P

P = Priority for designated age group

X = Required by law in school setting

O = Priority screening test **if equipment is available and screener is appropriately trained to use the equipment.**

\* = If there are NO vision screening records, these screening tests should be administered and information obtained

r = Recommend if concern is present

NOTE: If unable to respond on age level tests, administer recommended tests for lower ages.

## **GENERAL PREPARATIONS FOR SCREENING INFANTS AND TODDLERS**

Recent advances in infant vision assessment have made it possible to screen for vision problems from birth, thus allowing for much earlier detection of vision problems than in the past (e.g., Teller Acuity Cards, photo refractor). This early detection, if followed by appropriate referral and treatment, can have a significant impact on a child's development, school achievement, and overall quality of life.

The use of a functioning vision system for birth to age 3 is inherent for successful age appropriate completion of some of the tasks included in developmental screening tests such as the Denver II. A pattern of “fail” or caution items should alert the examiner to complete a more thorough review of the child’s vision.

Timing is a critical factor in screening the vision of very young children. Whenever possible, schedule the screening to occur at a time of day when the infant or toddler is typically awake and alert. Ask the parent/caregiver to bring a favorite toy, teething ring, pacifier, or other items that seem to quiet the child. During the screening the child should be kept as comfortable as possible, giving consideration to room temperature relative to the clothing worn, state of hunger, and position of the child.

Some children are quite visually attentive while drinking from a bottle or eating a cracker. Infants who lack head and neck control should be positioned so that their head and body are stabilized, either held by a parent/caregiver, or lying in an infant carrier. Most infants and toddlers are more visually attentive when positioned at least partially upright. Older infants and toddlers can be seated on the lap of a parent/caregiver. The child must feel secure in order to attend to the screening procedures.

The screener may find it helpful to use auditory cues (speech, noise making toys, etc.) to attract the child's attention to the vision task. However, the sound cues must be eliminated during the actual testing to be certain that the child is using vision, rather than auditory input, to respond during the test. The screener may also find it helpful to test the eyes in a specific sequence (e.g., right eye then left eye, then both eyes). Some equipment needed for testing includes a penlight, occluder and a small toy less than two inches in size.

### **EXAMPLES OF TASKS ON DENVER II THAT REQUIRE VISION FOR SUCCESSFUL COMPLETION:**

Regard own hand.

Work for toy.

Follow to midline.

Look for yarn.

Tower of cubes.

Any imitation activities that use visual cue only.

## **EYE LID REFLEX**

**Ages:** Birth to six months - priority

**Purpose:** To determine the presence or absence of the protective blink reflex.

**Equipment:** Form for documentation.

**Procedure:** If necessary, child is held by a second adult so that head is in an upright position and supported. The tester's hand is positioned 5" to 6" above the child's eye level and slightly in front of the child's face; the palm of the hand should be parallel to the front surface of the eyes.

The tester should rapidly lower the hand so that it passes directly in front of the child's face. Observe for the blink response immediately after the hand is lowered.

**Pass:** Child blinks in response to lowered hand.

**Fail:** Child does not blink in response to lowered hand after two opportunities to do so.

## **FIXATION**

- Ages:** Birth to six months – priority  
Six months to five years - recommended
- Purpose:** To determine the presence of a visual orienting response.
- Equipment:** Small colorful object, no larger than 2" and not noisy (e.g. finger puppet).  
Form for documentation.
- Procedure:** Tester is positioned facing the child at child's eye level. Present the object approximately 12" in front of child's nose at eye level and observe child's eyes. Both eyes should be directed toward the object for at least two (2) seconds. Use of initial noise to get attention is acceptable but do not provide continuous sound stimulation.
- Pass:** Child fixes on object with both eyes for at least 2 seconds.
- Fail:** Child does not fixate on object, or fixates with one eye only. Any eye drifting is abnormal.

## **RISK FACTORS**

- Ages:** Birth to three years - priority  
Three to twenty-one years – priority if there is no vision screening record for a child
- Purpose:** To determine the existence of conditions which are associated with a higher probability of vision impairment.
- Description:** There are specific conditions associated with a higher probability of, or risk for, vision impairment. The presence of any of these high risk factors can be noted when you initially obtain the client's history, or when you update the client's history. The presence of a risk factor should alert you to an increased possibility of vision impairment.
- Procedure:** When obtaining the client's history, inquire about the presence of each of the vision risk factors on the Checklist (page 18). When updating the case history you need only to inquire about the presence of new conditions (disease), newly expressed concerns by the client or caregiver regarding eyes/vision and overall developmental skills, and instances of head trauma since the previous history update.
- Pass:** When there are no risk factors present, proceed with the remainder of your vision screening protocol.
- When there is a risk factor present and the results of the remainder of your vision screening protocol indicate no vision problem is apparent, then vision screening on a regular schedule is recommended.
- Fail:** When there is a risk factor present and the results of the remainder of your vision screening protocol indicate apparent vision problems, or when the results are inconclusive, or when you have any question about the client's vision, referral to an ophthalmologist or optometrist is recommended.

### **RISK FACTORS -- Checklist**

- PREMATURE BIRTH (4 weeks or more)
- IN A NEONATAL INTENSIVE CARE UNIT FOR GREATER THAN FOUR DAYS, PLUS OXYGEN
- VERY LOW BIRTH WEIGHT [<1500 GRAMS (3.3 lbs.)]
- BIRTH DEFECTS INVOLVING THE HEAD OR FACE
- FAMILY HISTORY OF CHILDHOOD VISION IMPAIRMENT (e.g., Amblyopia, severe refractive error, strabismus or any visual perceptual problems)
- SUSPECTED OF HAVING A CONGENITAL INFECTION (e.g., CMV, Toxoplasmosis, Maternal Venereal Conditions, Rubella)
- A CONDITION (e.g., disease, syndrome) WHICH IS ASSOCIATED WITH VISION PROBLEMS (e.g., Down Syndrome, cerebral palsy, hearing impairment, Diabetes, Juvenile Rheumatoid Arthritis, hydrocephalus, retinoblastoma)
- CONGENITAL DEAFNESS (e.g., Usher Syndrome)
- PARENT, CHILD OR CAREGIVER HAS CONCERNS ABOUT THEIR VISION
- HEAD TRAUMA (e.g., Shaken Baby Syndrome)
- BRAIN TUMOR
- CHEMICAL EXPOSURE (e.g., lead poisoning, drugs during pregnancy, Fetal Alcohol Syndrome)

## **TRACKING**

**Ages:** Birth to three years – priority  
Three years to eight years - recommended

**Purpose:** To observe ocular-motor development.

**Equipment:** Small, brightly colored object, no larger than 2" and free of noise.  
Form for documentation.

**Procedure:** Screen with glasses on if child wears them.

Tester sits facing the child at child's eye level. Present the object approximately 12" in front of child's nose at eye level. When child has fixated on the object, move the object slowly to the right along the horizontal plane 6" to 8" (taking 2-3 seconds to cover the distance), then slowly move the object back to the central starting point. **Stabilize child's head if child does not naturally follow with eyes only.** Repeat procedure, moving object slowly to the left and back to the starting point.

**Pass:** Smooth, continuous movement with the eyes remaining in symmetrical alignment.

**Fail:** Tracking with one eye only or one or both eyes fail to maintain gaze at object.

**NOTE:** Infants below three months old may track with less than mature levels of smooth, coordinated movement. Refer only those with markedly poor performance on this procedure.

## **PUPIL RESPONSE**

- Ages:** Birth to three years – priority  
Three to twenty-one years - recommended
- Purpose:** To determine the presence or absence of the pupillary reflex to a light source.
- Equipment:** Penlight.  
Form for documentation.
- Procedure:** In a room with dim lighting, position the child so that s/he is not facing a window or other light source. Hold penlight 4" to 6" in front of right eye. Turn penlight on for 2 to 3 seconds while observing the right eye for pupil constriction. Turn penlight off and watch for pupil dilation. Wait 5 to 10 seconds; repeat the procedure for the left eye.
- Pass:** Each eye shows rapid, smooth constriction of the pupil when stimulated by the light, followed by smooth dilation in the absence of the light.
- Fail:** Either pupil fails to react to the light source, or reaction (constriction) is sluggish, jerky, or asymmetrical.
- NOTE:** Certain medications affect the pupillary reflex and could account for an abnormal pupil response to light. Regardless, abnormal pupillary reflex should be referred whenever observed, since this may suggest a neurological abnormality.

## TELLER ACUITY CARDS

**Ages:** Birth to three years – priority, **if equipment is available and tester has been trained appropriately in their use**; can also be used with older individuals who are unable to make the responses required by other acuity tests.

**Purpose:** To determine visual acuity.

**Description:** Visual acuity is determined by the smallest size grating on which the individual will fixate when viewed at a prescribed distance.

**Equipment:** Set (or age appropriate half-set) of Teller Acuity Cards  
Be sure the cards are blemish free  
Occluder  
Form for documentation.

**Procedure:** Screen with glasses on if child wears glasses.

The screener wishing to use the Teller Acuity Cards should carefully study the handbook which accompanies the cards and attend a special training session to learn the procedures\*. Various cards are placed in front of the individual at one of three test distances, depending on the individual's age. Each card has a black-and-white vertical grating on one side of the front surface of the card. The screener views the individual's eye(s) through an aperture in the center of the card and judges whether the individual fixates on the grating. Acuity is determined by the smallest grating seen by the individual. Testing is done with both eyes and with each eye separately.

**Pass/Fail:** Use referral criteria specified in the Teller Acuity Card Handbook. Norms have been developed for newborns and for children 1, 2, 4, 6, 9, 12, 18, 24, 30, and 36 months old.

\* Training is required for those using this tool for vision screening in an Infant-Toddler Part C network or sponsored event.

## **PHOTO REFRACTOR / PHOTOSCREENER™**

**Ages:** Six months to five years or when a child has severe disabilities and is unable to make the responses required by other acuity tests – priority, **if equipment is available and tester has been trained appropriately in its use.**

**Purpose:** To screen for nearsightedness, farsightedness, astigmatism, in addition to strabismus (misaligned or crossed eyes).

**Description:** The Photoscreener™ is a camera that takes instant pictures of a patient's eyes. The photographic process produces bright crescents on the film if a problem is present.

**Equipment:** Photoscreener™ loaded with film.  
Form for documentation.

**Facilities:** Have the room dimly lit. The sensitivity is dependant on pupil size. Make sure the room is light enough that you can see the subject's face, but dim enough to allow the pupils to naturally dilate.

**Procedure:** The operator aligns two illuminated arrows from the Photoscreener™ on the child's forehead. When the arrows are correctly aligned, the operator simply pushes a button, which automatically takes a picture.

The screener wishing to use the Photoscreener™ shall carefully study the accompanying handbook and attend a special training session in the use of the Photoscreener™.

**Pass/Refer:** An optometrist or ophthalmologist, working with the screener, will determine “pass” or “refer”.

**NOTE:** If a family wants to know the results of their child’s screening, the screener should provide them to the family with the explanation that they are preliminary results. An optometrist/ophthalmologist will also review the photos in order to assure accuracy of interpretation and to prevent over-referral.

If the Kansas Vision Screening Guidelines indicate a “refer” result, and the Photoscreener™ indicates a “pass” result, the child should be referred in accordance with the Kansas Vision Screening Guidelines.

## **CORNEAL LIGHT REFLECTION (HIRSCHBERG)**

**Ages:** Birth to eight years - priority

**Purpose:** To detect constant eye deviation. (strabismus)

**Description:** By noting the similarity or dissimilarity in the position of light being reflected in the pupils, the observer is able to detect a constant eye deviation of a lesser degree than possible when observing the eyes.

**Equipment:** Penlight.  
Form for documentation.

**Facilities:** Normal or lower light level. Minimum number of light sources (windows, overhead lights, etc.).

**Procedures:** Screen with glasses on, if individual being screened wears glasses.

Position the individual so that the penlight and the screener's line of vision are at midline in front of the child's eyes at a distance of 14 – 18 inches. The child must be looking straight at the screener. Holding the penlight horizontally, direct the light at the bridge of the child's nose. Observe the pupils and check the position of the light reflection in each eye.

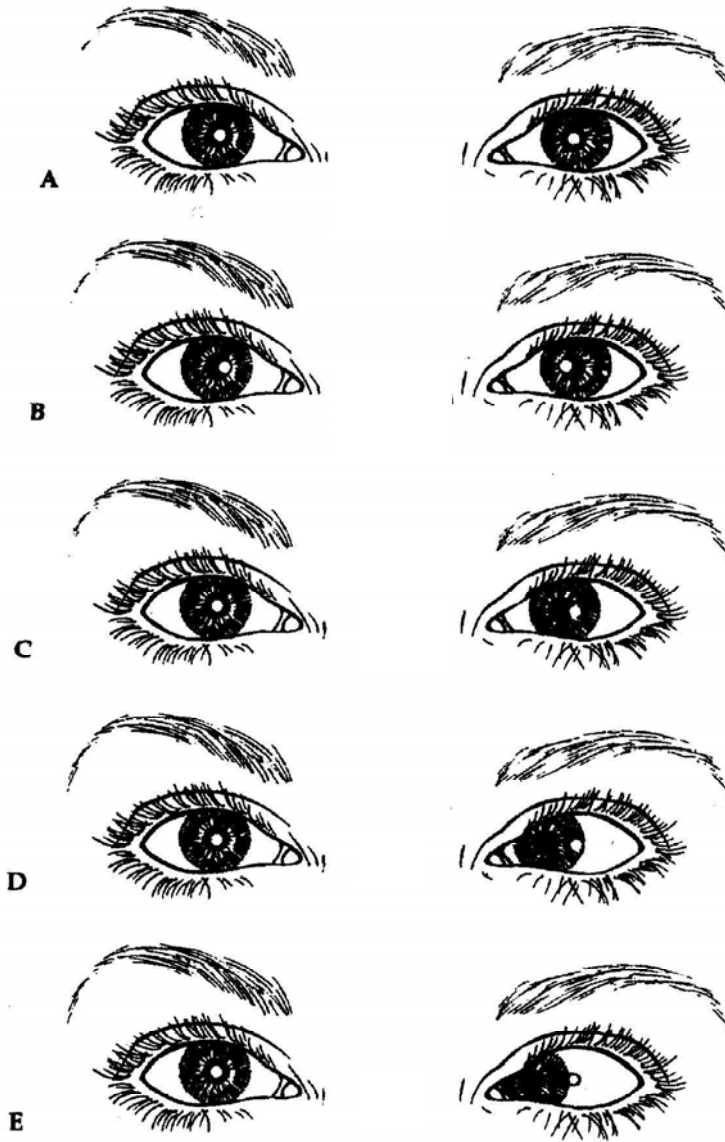
**Pass:** The reflection of the light appears to be in a similar position in the pupil of each eye. See Figure A in the accompanying illustration for an example of normal light reflections.

**Fail:** The reflection of the light does not appear to be in a similar position in the pupil of each eye. See Figures B, C, D and E in the accompanying illustration for examples of abnormal light reflections.

**NOTE:** The shape of the eye opening depends on racial characteristics. Since alignment of the eyes is noted by a centered pupillary light reflex, the shape of the eye opening should have no influence on test results.

Essentially all babies have a flat bridge of the nose. This results in less scleral show (white of the eyes). Hence, normally aligned eyes may appear turned in if the examiner attends to the scleral show and not the corneal light reflex.

## DIAGRAM OF HIRSCHBERG TEST



The position of the light reflection on the cornea or pupil may be used to detect strabismus.

- (A) Reflection falls slightly nasal in each eye (normal).
- (B) Characteristic asymmetry of the light reflection in wall-eyed strabismus (exotropia).
- (C) Characteristic asymmetry of the light reflection in cross-eyed strabismus (esotropia).
- (D) Characteristic asymmetry of the light reflection in cross-eyed strabismus (esotropia).
- (E) Characteristic asymmetry of the light reflection in cross-eyed strabismus (esotropia).

## **ABC'S OF VISION**

**Ages:** All ages - priority

**Purpose:** To ensure that the eyes are in good health by observing the appearance of the eyes and eliciting information regarding behaviors and complaints concerning functional use of the eyes.

**Description:** Conditions affecting the health of the eye can cause vision problems and, if unattended, can lead to eye damage; behaviors and complaints can indicate the presence of vision problems.

**Procedure:** See accompanying checklist, "The ABC's of Vision Difficulty" (page 26). Through visual inspection of the child's eyes, note whether any of the "Appearance" conditions are present. Caregiver, teacher, and other service provider reports should be elicited to determine if a history of any of the "ABC's" conditions is present. Request information for age appropriate behaviors only.

**Pass:** Based on age appropriate behaviors, none of the conditions are present. No referral is recommended.

**Fail:** Based on age appropriate behaviors, any of the conditions are present. Refer to the child's ophthalmologist or optometrist.

## **ABC'S OF VISION DIFFICULTY**

This list can be used to identify the need for a vision examination and should be shared with the classroom teacher, parents, Infant-Toddler network, or child's physician.

### **A'S - APPEARANCE OF THE EYES**

- Reddened eyes
- Watery eyes
- Encrusted eyelids
- Frequent styes
- Droopy eyelids
- Eyes in constant motion, eyes jerk on fixation
- Eyes crossed- turning in or out at any time (>6mos.)
- Difference in size of eyes

### **B'S - BEHAVIORS INDICATIVE OF POSSIBLE VISION DIFFICULTY**

- Abnormal sensitivity to light
- Rubs eyes frequently
- Blinks excessively or rarely blink
- Stares at bright lights frequently
- Turns head so as to use one eye only to look at object in front of child
- Brings objects up to one eye rather than both eyes to view it
- Covers or closes one eye frequently
- Tilts head to one side when looking at object in front of child (>6 months)
- Exhibits poor eye-hand coordination (> 6 months)
- Doesn't appear interested in looking at toys or faces (< 6 months)
- Doesn't respond to visual toys but is responsive to toys with sound (3 to 12 months)
- Stares at own hand or an object and/or moves own hand or object in front of the eyes frequently (>12 months)
- Places an object within a few inches from the eyes to look at it (>18 months)
- Thrusts head forward or backward while looking at distant objects
- Squints, frowns or scowls when looking at objects (or reading)
- Have academic difficulties
- Avoids close work
- Exhibits short attention span
- Exhibits "acting out" or "class clown" behavior
- Daydreams
- Dislikes tasks requiring sustained visual concentration
- Exhibits nervousness, irritability or restlessness after maintaining visual concentration
- Exhibits unusual fatigue after completing a vision task
- Places head close to book or desk when reading or writing
- Loses place while reading
- Uses finger to keep place while reading
- Says aloud or mouths the words while reading
- Moves head rather than eyes while reading
- Exhibits difficulty remembering what is read
- Persistent letter reversals after the second grade
- Confuses similar words when reading
- Confuses the following letters when reading or spelling: o and a; h and n; e and c; n and m; f and t.
- Exhibits unusual awkwardness

### **C'S - COMPLAINTS ASSOCIATED WITH USING THE EYES**

- Headaches
- Nausea and/or dizziness
- Eyes hurt
- Burning, itching, or tearing of eyes
- Blurring or double vision

## COVER-UNCOVER TEST

**Ages:** Six months to five years – priority  
Six years to twenty-one years -- recommended

**Purpose:** To detect children whose eyes have a tendency to move out of alignment when one eye is covered.

**Equipment:** Small colorful object, no larger than 2" and not noisy.  
Form for documentation.  
Occluder.

**Procedure:** Tester is positioned facing the child at child's eye level. Hold the object 12 inches away from the child's bridge of nose and at eye level with your left hand.

Observe the child for fixation on the object. While the child is fixated on the object, cover the left eye with occluder for at least 3 seconds.

Watch the eye that is not covered for any movement. If fixation is lost, attempt to reestablish fixation by removing occluder. Attempt to cover the left eye again.

Fixation must be kept on the object for 3 seconds. Remove occluder and watch for any movement of the eye that was just uncovered. The left eye should remain in alignment with the eye that was not covered.

Switch the object to your other hand. Establish fixation and cover the child's right eye with an occluder. Maintain fixation on the object for 3 seconds. Remove occluder and watch for any movement of the eye that was just uncovered.

**Pass:** Child maintains fixation on the object while an eye is covered. No movement of the eyes was detected.

**Fail:** Child does not maintain fixation with both eyes when either eye is covered or uncovered. Movement of only one eye is detected. One or both eyes "float" in or out.

## NEAR POINT OF CONVERGENCE

**Ages:** Six months to eight years – priority  
Eight to twenty-one years - recommended

**Purpose:** To test for convergence of eyes while focusing on a nearby object.

**Equipment:** Target object (e.g., small toy; penlight; other small object)  
Form for documentation.

**Procedure:** Screen with glasses on if individual wears them.

Seat individual in front of the screener. Hold a small object approximately 12" in front of the individual's face at eye level. Direct the individual's attention so eyes fixate on the small object. Move target object slowly at individual's eye level on midline toward the bridge of the individual's nose. Observe how both eyes follow the target object.

**Pass:** Eyes converge and pupils constrict to focus on moving object and eyes have a symmetrical response until object is within 3" from the bridge of the nose.

**Fail:** Poor fixation or asymmetrical response of eyes to the moving object beyond 3" from the bridge of the nose, or eyes do not converge to 3" from bridge of nose.

## **WORTH 4-DOT TEST (FUSION)**

**Ages:** Eighteen months to eight years - priority

**Purpose:** To detect suppression of one eye.

**Equipment:** Special flashlight with vinyl disc containing 4 dots  
Red-green goggles  
Form for documentation.

**Procedure:** Screen with glasses on if child wears them.

Child wears red-green goggles, with the red lens in front of the right eye. Tester holds special flashlight with disc in front of child's face at a distance of approximately 12"; **flashlight is held with the red dot at top**. Tester turns on flashlight. Child should have both eyes open while testing. Depending on age and abilities of the child, two options for administering are:

- 1) For children with counting skills: ask them how many dots they see.
- 2) For children who don't count: ask them to touch or point to all the dots.

**Pass:** Child counts, touches or points to four (4) dots.

**Fail:** Child counts, touches, or points to two (2), three (3), or five (5) dots. An individual who sees 2 dots may be suppressing the left eye. An individual who sees 3 dots may be suppressing the right eye. An individual who sees 5 dots may be experiencing diplopia, or double vision.

**PERCEPTION OF DEPTH (STEREOPSIS)**  
**TITMUS FLY\***

**Ages:** Eighteen months to eight years - priority

**Purpose:** To determine the presence or absence of stereopsis or visual perception of three-dimensional space (binocular vision).

**Description:** The child tries to "pinch" the tip of a wing between the thumb and forefinger.

**Equipment:** Polaroid glasses  
Titmus Fly test book  
Form for documentation.

**Procedure:** Screen with glasses on if individual wears them.

Place Polaroid glasses in front of child's eyes. Hold Titmus Fly test book at normal reading distance of 13-16" and **at a 45° angle** in front of child. Do not lay test book flat. Ask child to pinch the fly's wing tips. Do not demonstrate with test booklet.

**Pass:** Fingers remain above the plane of the book surface.

**Fail:** If individual consistently touches the book surface when trying to pinch the wing tips, the child should be rescreened. Refer if individual fails rescreening test.

**Screening special populations:** Other tests that utilize different targets, such as a reindeer or butterfly, are available for young children who are afraid of the fly. Young children may respond to "pick up" rather than pinch.

\* There are other Stereopsis tests similar to the Titmus Fly that can be used instead of the T.F., e.g., the Stereo Butterfly and the Stereo Reindeer.

**PERCEPTION OF DEPTH (STEREOPSIS)**  
**RANDOM DOT E**

- Ages:** Thirty months and older - priority
- Purpose:** The specially designed cards and glasses test the child's stereoscopic vision. The absence of stereoscopic vision may suggest amblyopia or other significant vision problems.
- Equipment:** The Random Dot E kit includes polarized glasses, a model E card, a raised E card, and a stereo blank card.
- Procedure:** Select a room that is quiet and well lit. Arrange the setting so you can present the cards at a distance of 20 inches and 40 inches from the child. Check the cards from the child's position to ensure that no distracting reflection appears on the cards.
- With the polarized glasses on, have the child examine the Model E card visually and tactilely. Emphasize that the E “sticks out” on the Model E card. Move to a position where the cards can be presented 20 inches away from the child's eyes. Shuffle the cards behind your back and then present the cards. Take care to present the cards correctly. The word "Raised" should be at the top of the card. Ask the child to point at the E that sticks out. Shuffle the cards again and present them again until the child correctly identifies the raised E card four consecutive times out of no more than eight trials. Move back to where the cards can be presented 40 inches away from the child's eyes. Repeat the procedure of shuffling and presenting the cards until the child responds correctly four times in a row within eight trials.
- Pass:** The child identifies the Raised E card four times out of six attempts.
- Fail:** The child is unable to identify the Raised E card correctly four out of six attempts.

## GENERAL CONSIDERATIONS FOR ACUITY TESTING

Vision screening is not diagnostic. Children who fail the initial screening test and the rescreening test must be referred to an eye specialist for a diagnostic examination. Screening will not identify every child who needs eye care, nor will every child who is referred require treatment. The criteria for referral have been set to keep both the over-referrals (those with no problem on examination) and the under-referrals (those who are missed) at a minimum.

A screening for *distance visual acuity* is considered by authorities to be *the most important single test* of visual ability. This test will identify more children who require eye care than any other single test. Screening for distance visual acuity has proven reliable in detecting such vision problems as amblyopia (lazy eye), myopia (nearsightedness), hyperopia (farsightedness), astigmatism (curvature defects of the eye's surface causing distorted images), and other conditions, such as cataracts, which cause decreased visual acuity. Screening for *near visual acuity* has proved reliable in detecting reading difficulties and other problems associated with close work.

Early detection and treatment is vital in children with such eye problems. Both amblyopia and strabismus can cause a child to visually ignore one eye and rely on the other. The ignored eye becomes inefficient through lack of use. If the condition is not treated before the age of six or seven (ideally should be detected and treated before age 3), permanent vision impairment in the unused eye can result. Poor vision also can affect learning ability and the entire adjustment to school.

### I. Setting up the Screening Area

- A. A quiet area free from distractions should be selected for the screening. The area should be large enough to allow a 20-foot lane with no obstructions between the individual and the chart. If it is not possible to obtain this distance, a 10-foot child-to-chart distance can be used with a chart specifically designed for 10 feet.
- B. The acuity chart should be positioned so that the 20/30 line is at the approximate eye level of the child/youth to be screened. The chart should be taped against a plain, light background. Avoid using a wall close to windows where glare may be a problem. Also avoid overly bright lights or shadows.
- C. Measure exactly 20 feet from the chart when using a Snellen Chart designed for testing at 20 feet (or 10 feet if 10-foot chart is being used). Tape a horizontal line (masking tape) on the floor at the 20-foot or 10-foot point.
- D. The individual to be tested can either stand or be seated on a chair for the screening. The individual's body should be aligned so that the fronts of both eyes are directly over the masking tape line. When standing, the individual would place the balls of the feet on the line. Footprints or "Magic feet" affixed to the floor are helpful in keeping young children in proper position. (A 9" square of floor tile with footprints outlined on it makes durable "Magic Feet").























































