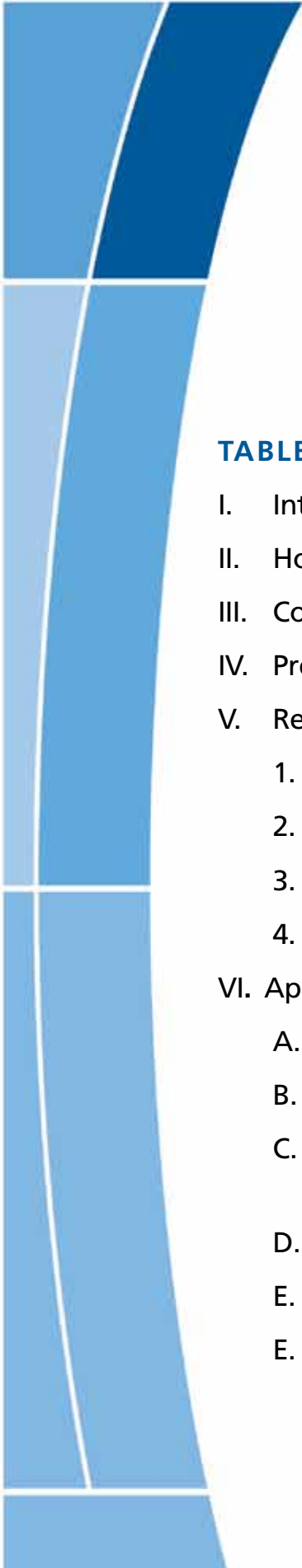


Revised 2011

Preschool

VISION SCREENING GUIDELINES





Preschool VISION SCREENING GUIDELINES

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THE GOAL OF PRESCHOOL VISION SCREENING

The goal of vision screening is the prevention of serious vision problems through early detection and referral for diagnosis and treatment. It's important to note that, although vision screenings are intended to identify children with vision disorders and alert parents to possible vision problems, they are not diagnostic and do not take the place of a comprehensive eye examination by an eye care professional.

The United States Preventive Services Task Force (USPSTF) states that screening tests are reasonably accurate in identifying amblyopia (lazy eye), large amounts of refractive error and strabismus (eye misalignment). Through the use of effective preschool vision screening tests, children with eye problems can be referred to the proper sources for examination, diagnosis and treatment. Early detection and correction can save a child from a lifetime of visual impairment. Refer to Appendix A for referral resources.

Surveys of state and local agencies have shown that there are no standardized methods to screen for vision problems during the first years of life. Per the Ohio Revised Code (Section 3313.69) and in response to the need for standardized preschool vision screening guidelines, the Ohio Department of Health developed



the Preschool Vision Screening Guidelines (2000 and Revised in 2011). The guidelines were developed in collaboration with an ad hoc committee. The committee members include pediatric and vision health professionals and public health representatives of local and state agencies, both private and public. Refer to Appendices B and C for a listing of participating agencies and individuals.

These guidelines are written for organizations and individuals who provide public health vision screenings for children from three to five years of age and include screening procedures and criteria for referral. Information on normal visual development and common types of vision problems are also included.

Ohio Revised Code (Section 3313.673) requires that children receive a vision screening by November 1st of the year they start kindergarten, but it is important that children receive a vision screening during the preschool years. The preschool years make up a critical period for the development of visual skills.

HOW NORMAL VISION DEVELOPS

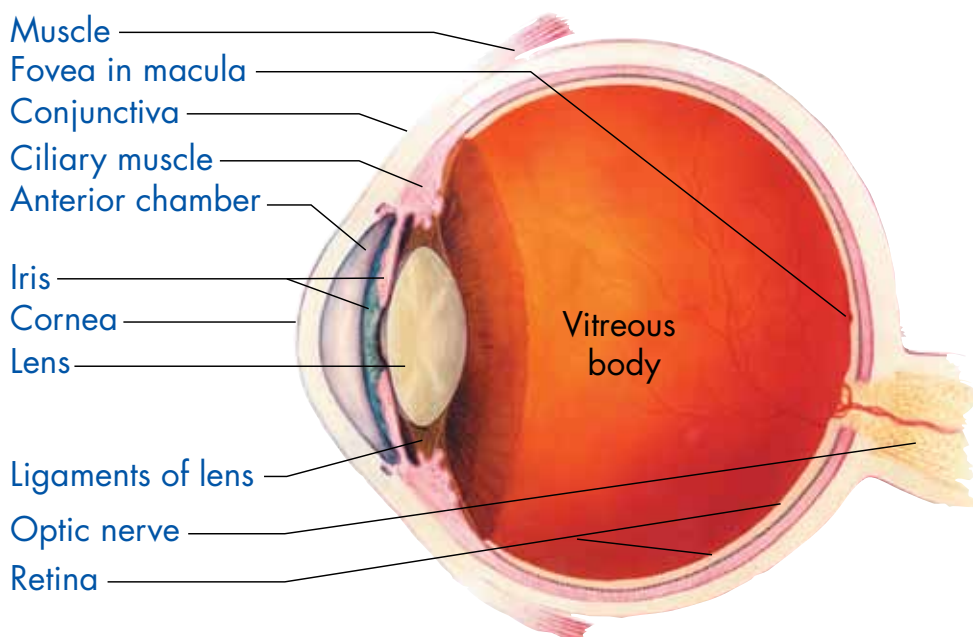
Often children cannot tell you how they see. Vision problems may not be obvious. Most vision problems are not painful. Even after looking at children's eyes, and watching how they act, it may still be difficult to recognize that they have vision problems.

During the early years of life, children learn to use their eyes. At first, babies learn to recognize familiar faces. Next, they begin to figure out how to reach and hold onto things that they see. They look at pictures and start to draw. By the age of four, children may be able to draw and name pictures and to copy shapes and letters. To do these things, children must have usable vision.

Babies who have vision problems may learn to "see" in a way that is different

from babies with normal vision. Babies or toddlers with vision problems may need help to learn skills like eating, playing with toys, or naming common things (like a ball, a book, or a shoe). Children who may have vision problems need help during the first years of life.

Without help, children may not be able to "catch-up" later, even if the vision problem is corrected and their vision is normal. Children with vision problems may have trouble with school work. As adults, they may have trouble learning job skills. That is why it is very important to screen the vision of young children to identify vision problems or potential vision problems as early as possible and to help assure children with vision impairments get the special help they need.



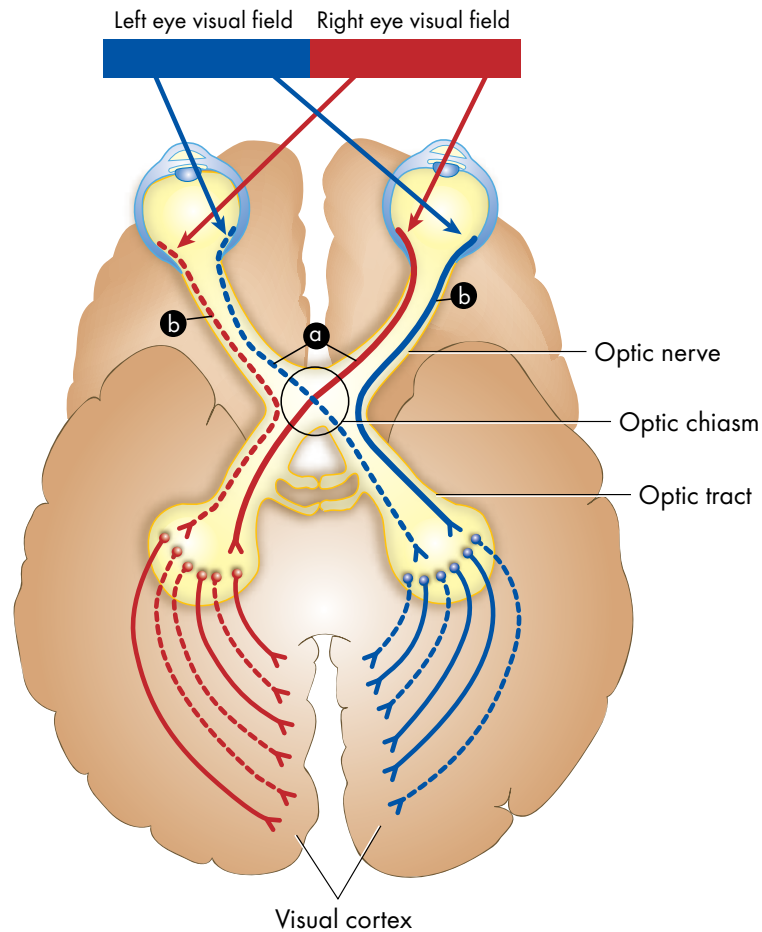
For a person to see normally, all parts of this visual system must work. The visual system is not fully developed at birth. An infant with normal vision will not be able to see things as clearly as an adult with normal vision. The baby's eyes do not work together all the time until about four months of age. Pathways carrying signals to the brain, and the brain itself, continue to develop during the early years of life.

As the eye and the visual cortex of the brain develop, a child's ability to see detail improves. As the eyes begin to work together, the brain learns to combine the images from the two eyes into a single image. The child learns how to use the signals in the brain to recognize things, such as faces and toys, and to tell the difference between things that look similar. Vision continues to develop until a child is at least 9 years old.

In order for a person to see, several things must happen:

- 1 The eyes must be able to catch light and send signals to the optic nerve of each eye.
- 2 The optic nerves of each eye must be able to send signals to the brain's visual cortex, the "seeing brain."
- 3 The visual cortex must be able to put together the signals from each eye to create one view of the world.





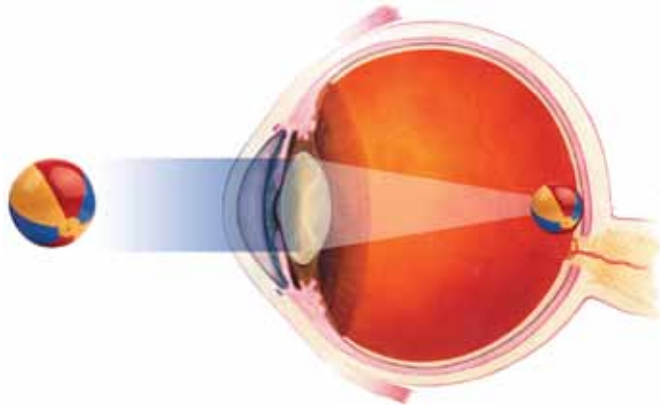
The Visual Pathway

Vision is generated by the retina as information leaves the eye by way of the optic nerve, and there is a partial crossing of nerves at the optic chiasm. From the optic chiasm the nerves are called the optic tracts and synapse at the lateral geniculate nucleus. From there, they travel to the primary visual cortex at the back of the brain.

The brain works on a crossed wire system. Each eye is divided into right and left visual fields. Each eye gets information from both visual fields. To ensure that the brain doesn't get extraneous information, the nerves from

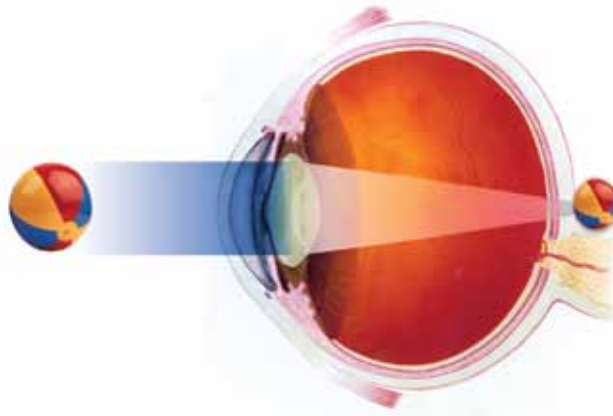
the retina divide themselves out into separate pathways. The inner visual field retinal nerves (a) cross over at the optic chiasm - whereas the lateral nerves (b), do not cross.

Damaging the visual system before the optic chiasm will affect one eye, both visual fields - analogous to closing one eye. Damaging the pathway after the chiasm, though, will damage parts of both eyes, and only one visual field. If you could imagine, the field of view seen would be only 90°, from straight ahead to one side.



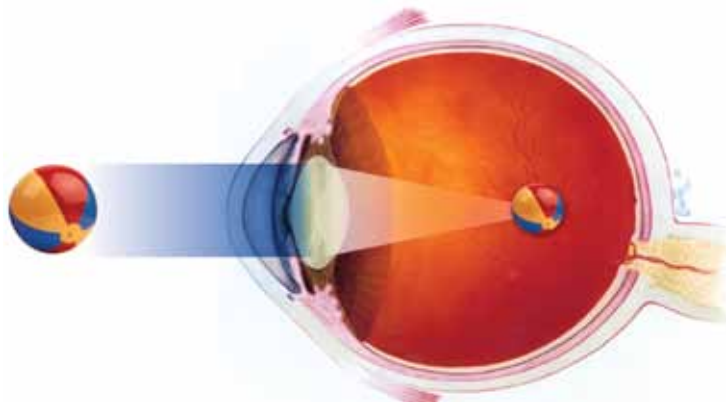
NORMAL EYE

In a normal eye, light enters our eye through the pupil. The cornea, at the front of our eye, bends the light. The light passes through the lens to the retina. It then focuses on the retina, like a little picture of whatever we are looking at. Nerve cells in the retina send that “picture” to our brain.



HYPEROPIA farsighted

Those with hyperopia see distant objects clearly, but close up objects appear blurry. Farsightedness occurs if your eyeball is too short or the cornea has too little curvature, so light entering your eye is not focused correctly.



MYOPIA nearsighted

Those with myopia see near objects clearly, but far away objects appear blurry. With myopia, the eyeball is too long, or the cornea is too steep, so images are focused in the vitreous inside the eye rather than on the retina at the back of the eye.

COMMON VISION PROBLEMS THAT MAY BE IDENTIFIED BY SCREENING

If the eyes are not used properly, vision will not develop normally. It is possible that vision may get worse. For this reason, it is important to find and treat children with problems or at risk for problems affecting the visual system as early as possible. Young children with vision problems are much less likely to explore the world around them. They may miss many important experiences. The earlier a vision problem is diagnosed and

treated, the more likely a child is to develop normal skills.

Amblyopia (lazy eye), uncorrected refractive error (errors of eye focusing), and strabismus (eye misalignment) are the most frequently occurring vision problems of young children and pose a significant public health threat. These vision problems are the leading handicapping conditions of childhood.



Amblyopia

Amblyopia, also known as lazy eye, is reduced clarity of vision in one or both eyes not immediately correctable with glasses or not attributable to other ocular anomalies. Further, amblyopia accounts for a total of six million Americans who experience significant vision loss. Vision loss attributable to amblyopia is entirely preventable.



Refractive Error

Refractive error, including myopia, hyperopia, and astigmatism, is an inaccurate focusing of the eye which results in blurred vision. Further, uncorrected refractive error is the frequent cause of amblyopia.



Strabismus

Strabismus is a misalignment of the two eyes and interferes with seeing depths. Uncorrected refractive error is a frequent cause of strabismus. Strabismus is a risk factor for amblyopia.

Appendix E includes descriptions of selected pediatric eye problems.

PRESCHOOL VISION SCREENING OVERVIEW

There are three components to a Preschool Vision Screening, observing the child for possible signs or symptoms, followed by a test for visual acuity and finally a test for stereopsis. The tests described in the following sections do not take the place of a complete examination by an

eye care professional, but are intended to identify children who have or are at risk for amblyopia, large amounts of refractive error, strabismus, or visually apparent poor eye health.

It is important that the individuals performing vision screening tests on preschool children are trained.



You will Need the Following when Conducting a Preschool Vision Screening:

- A quiet space, with at least of 10 feet for testing distance
- A measuring tape to measure appropriate distances
- Masking tape to mark appropriate distance
- A well lit room, free from any glare
- Equipment to test distance visual acuity and stereopsis
- Antibacterial wipes to clean equipment in between uses



SCREENING TESTS & REFERRAL CRITERIA

TEST FOR	RECOMMENDED TESTS	REFERRAL CRITERIA
Observation	No tests needed – observation is not a test	<ul style="list-style-type: none"> Refer for any appearance or behavior concerns or complaints.
Distance Visual Acuity	<ul style="list-style-type: none"> VIP single, crowded Lea Symbols® Visual Acuity screening test system at 5 feet OR 	<ul style="list-style-type: none"> A child misses 2 or more symbols during presentation of the base line cards; or the child misses 2 or more symbols on the disk during the test.
	<ul style="list-style-type: none"> Lea Symbols linear chart at 10 feet 	<ul style="list-style-type: none"> 20/40 or worse in either eye; to pass the child identifies 3 of 5 symbols on the 20/32 line with each eye separately.
	<p><i>OPTIONAL TEST</i></p> <ul style="list-style-type: none"> SureSight Vision Screener 	<ul style="list-style-type: none"> An asterisk (*) next to a reading on the LCD screen.
Stereopsis	<ul style="list-style-type: none"> Preschool Assessment of Stereopsis with a Smile (PASS 2) <p>OR</p>	<ul style="list-style-type: none"> If a three or four year old child does not correctly identify card B on 4 out of 5 presentations. If a five year old child does not correctly identify card C on 4 out of 5 presentations, and/or does not correctly identify card B on 4 out of 5 presentations.
	<ul style="list-style-type: none"> Random Dot E 	<ul style="list-style-type: none"> Fails to identify the figure 4 times at 5 feet; to pass the child identifies the figure 4 out of 4 times.

OBSERVATION FOR EYE CONDITIONS



Observation is not a test. However, all children should be observed for signs of a problem during the screening session or at any other time.

The signs and symptoms of appearance to note include but are not limited to the chart on the right. Referrals should be made when any of these signs are noted by an observer during screening or at any other time.

Note Any of the Following Eye Conditions

- Ocular asymmetry, including eye size
- Abnormal color of iris, shape of pupils, etc.
- Red, swollen eyelids
- Drooping eyelid(s)
- Growth on lid or eye
- Crusty eyelashes
- Unequal pupil size
- Cloudiness or haziness of cornea
- Red and watering eyes
- Misaligned eyes (ocular muscle imbalance)
- Eyes in constant motion, i.e., nystagmus
- Poorly fitting frames or scratched corrective lenses

Note the Following Behaviors

(Referrals may also result if behaviors have been observed by a teacher, parent or nurse, **frequently**)

- Holding working material excessively close or far from the eyes
- Squinting
- Frequent rubbing or blinking of eyes
- Frowning when reading
- Thrusting head forward
- Constant head tilt or face turn; any unusual head position
- Covering an eye while reading
- Closing one eye in sunlight

Note the Following Complaints

(Sometimes, even with very young children, parents or caregivers may hear **complaints** made by the child.)

- Eye pain
- Itching and/or burning sensation
- Double vision
- Blurry vision
- Frequent headaches when reading
- Light sensitivity
- Spots floating across field of vision

MONOCULAR DISTANCE VISUAL ACUITY TESTING

Visual acuity testing is conducted to determine how well the child sees small objects at a distance with each eye. The test aids in the detection of the following refractive errors: myopia or nearsightedness (poor distance visual acuity); hyperopia or far sightedness (poor near visual acuity); or astigmatism (distorted, wavy vision).

In order to screen for monocular distance visual acuity, the child will perform tasks that require use of their eyes and the

screeener will note how well the child performs the tasks. The decision about which test to use for screening will depend on how well the child talks or signs, which tests are available, and the screener's training and ability. If a child has trouble completing one type of visual acuity task, a different visual acuity task should be selected. If a child cannot complete any of the visual acuity tests specified, the child fails the screening and should be referred.

Recommended Tests

The Ohio Department of Health recommends that you use one of the following when screening distance visual acuity in preschool children:

- 1 VIP single, crowded Lea Symbols® Visual Acuity screening test system at 5 feet **OR**
- 2 Lea Symbols linear chart at 10 feet with light box
- 3 *OPTIONAL TEST* - SureSight Vision Screener

If you are considering buying one of the above and need help with selecting a chart or finding a vendor, you can call the **Ohio Department of Health** at **614-466-5332** for assistance.

OPTION

1

Monocular Distance Visual Acuity Testing
VIP SINGLE, CROWDED LEA SYMBOLS®
VISUAL ACUITY SCREENING TEST SYSTEM - at 5 feet



The **Vision in Preschoolers (VIP) Study** Group conducted a multi-center, multi-disciplinary study to evaluate the performance of vision screening tests for identifying preschool children with amblyopia, strabismus, significant refractive error, or unexplained reduced visual acuity.

The Vision in Preschoolers (VIP) Study provide research about preschool vision screening. A new screening system specifically designed for preschool aged children called the VIP single, crowded Lea Symbols® Visual acuity screening test system at 5 feet was developed. This system performed very well and was able to identify more true positive children in this study. Therefore, this new system has been included as a screening option for distance visual acuity.

EQUIPMENT

To conduct a Distance Visual Acuity screening using the VIP single, crowded Lea Symbols Visual Acuity® screening test system at 5 feet you will need the following equipment:

- Two Crowded Single Lea Symbols Visual Screening Test disk cards with masking window.
 - One card is for testing three year olds, and the other for testing four and five year olds.
 - Each card is two sided. One side is for the right eye and one side is for the left eye.
 - The disk card contains eight symbols on each side (combinations of an apple, a house, a circle, a square).
 - Each symbol is surrounded by black lines, called crowding bars.
 - Each time the disk is turned, a different symbol appears in the masking window.
- A lap card with each of the four symbols surrounded by crowding bars on it.
- Two pairs of occluder glasses (one for testing each eye).
- Lamp stand-if lighting is not adequate.

SETTING UP

- There should be little to no other activity in the room to distract the child. No other children should be waiting to be screened in the same area as the child being screened.
- The room should not be dark. If the screener cannot adequately observe the child being screened, the room is too dark.
- Typical classroom lighting with many overhead fluorescent bulbs may have too much glare.
- Arrange the child's chair so that the cards are 5 feet from the child's eyes. The child's eyes should be 5 feet from the cards. The child's eyes should be at the same height as the cards.
- Orient the child to the four symbols on the lap card by asking what the symbols look like. The child must be able to identify or name all 4 symbols.
- If the child cannot match or name the symbols, mark "**Unable to test.**"

CONDUCTING THE TEST

❑ STEP 1

Position the child 5 feet from where the cards will be presented. Make sure the child's eyes are lined up with the 5 foot distance.

❑ STEP 2

To test the right eye, place the occluder glasses on the child so that the left eye is covered. Choose the proper baseline cards for the right eye and go through all four presentations.

❑ STEP 3

Pick up the appropriate disk card for the child's age and begin testing with the symbols. After the child gives his/her response (verbal response or points to the corresponding symbol on the lap card), rotate the wheel **clockwise** to the next symbol.

Continue testing with each successive symbol until the child completes testing on all symbols. Be sure to move the disk in the same **clockwise** direction. If a child misses 2 or more symbols during presentation of the baseline cards or if a child misses 2 or more symbols on the disk during the test for either the right or left eye then a referral is made.

❑ STEP 4

To test the left eye, cover the right eye with the occluding glasses. Repeat the testing procedure from Step 3 on the left eye.

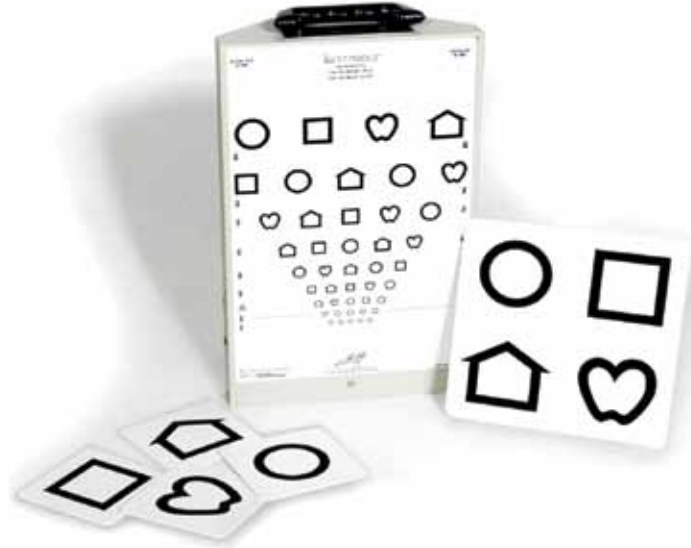
REFERRAL CRITERIA

If a child misses 2 or more symbols during presentation of the baseline cards or if a child misses 2 or more symbols on the disk during the test for either the right or left eye then a referral is made.

OPTION

2

Monocular Distance Visual Acuity Testing LEA SYMBOLS LINEAR CHART - at 10 feet



EQUIPMENT

- Lea Symbols Linear Chart for use at 10 feet
- Light box that fits above chart
- Occluder, either paddle or spectacle occluders
- Lap Card

SETTING UP

- There should be little to no other activity in the room to distract the child. No other children should be waiting to be screened in the same area as the child being screened.
- The room should not be dark. If the screener cannot adequately observe the child being screened, the room is too dark.
- Typical classroom lighting with many overhead fluorescent bulbs may have too much glare.
- Measure the screening distance to the acuity chart, and place masking tape at both ends of the measurement at 10 feet. Be certain that the chart is being used at the correct distance.
- Turn on the lighted cabinet.
- Position the lighted cabinet to ensure that the eye chart is at the child's eye level (seated or standing).
- If the child is seated, the back of the chair should be placed on the line, and the back of the child's head should line up with the tape. If the child remains standing, the back of his/her heels should be placed on the tape.

CONDUCTING THE TEST

❑ STEP 1

Have the child seated or standing at the 10 feet distance from where the eye chart is presented. If the child wears glasses, test with glasses on. If the child says that sight is better with glasses off, test both ways.

❑ STEP 2

Familiarize the child with the eye chart by practicing the names of each symbol. This can be done close up or at the testing distance.

❑ STEP 3

Occlude the left eye and test the right eye first. Observe that the child's eye is totally covered; a spectacle type occluder is helpful to prevent peeking. If you see the child turn his/her face sideways during the screening, reposition his/her face so that it is squarely opposite the eye chart. At all times, you or your screening assistant must keep your eyes on the child.

❑ STEP 4

Point below the symbol or letter you want the child to identify. The child identifies one symbol or letter from each line, starting with the 20/100 line, until they reach the pass line which is 20/32 depending on the chart used. On the pass line, the screener can point to each symbol or letter. Encourage the child to guess if he/she hesitates. Always present the entire chart to the child. Do not isolate lines, letters or symbols.

❑ STEP 5

Occlude the right eye and test the left eye. Repeat Step 4.

REFERRAL CRITERIA

A referral is made on children whose visual acuity is 20/40 or worse in either eye. To pass the Lea Symbols Linear Chart, a child must be able to identify three out of five symbols or letters on the passing line, which is 20/32, with each eye separately.

OPTIONAL
TEST

SURESIGHT® VISION SCREENER



A SureSight Vision Screener®, a screening autorefractor, can be used in place of Monocular Distance Visual Acuity testing. The SureSight Vision Screener® is for refractive error and may identify nearsightedness, farsightedness, astigmatism and mean spherical difference for anisometropia (the difference in refractive area between the eyes).

We recommend using the Vision in Preschoolers Study (VIP) criteria when using the SureSight Vision Screener®. The SureSight is available from several different vendors. The VIP software is available through School Health and can be installed for a nominal fee.

EQUIPMENT

- Welch Allyn SureSight Vision Screener (www.welchallyn.com)

REFERRAL CRITERIA

An asterisk(*) next to a reading on the LCD screen.

STEREOPSIS VISUAL TESTING

Stereopsis screening helps to determine if a child is using both eyes together, and may identify a child who has or is at risk for amblyopia (lazy eye).

It is recommended that you use the Preschool Assessment of Stereopsis with a Smile (PASS 2), formerly known as the Stereo Smile II, or the Random Dot E (RDE) to test preschool children for stereopsis.

The stereopsis test needs to be used in conjunction with the Lea Symbols Linear chart at 10 feet or SureSight Vision Screener. Stereopsis is an **OPTIONAL** test with the VIP single, crowded Lea Symbols® VA screening test system at 5 feet.

Recommended Tests

The Ohio Department of Health recommends that you use one of the following when screening stereopsis:

1 Preschool Assessment of Stereopsis of Stereopsis with a Smile (PASS 2) **OR**

2 Random Dot E

STEREOPSIS HELPFUL HINTS

- Choose a well-lit, glare free area. Be sure there is no glare on the surface of the cards.
- To preserve the polarized glasses, avoid touching the lenses. To clean the lenses, wipe them with a regular soft dry cloth. Clean the stems and frames in between uses with antibacterial wipes.
- Always watch the child's eyes to determine if the child is looking at both cards before identifying the card with the stereogram. It is a good idea to remind the child each time to look at both of the cards before pointing.
- Be sure to separate the cards sufficiently to be able to determine which card the child has selected as having the smile face or "E".
- If the child wears glasses, test the child with his/her glasses on.
- Ensure that the arrow on the back of each card is pointing up (▲) for PASS2 or raised side is up for Random Dot E.
- Always hold the blank card at exactly the same distance from the child as the other card.

OPTION

1

Stereopsis Visual Testing SMILE (PASS 2)



EQUIPMENT

- Card A -Demonstration card
- Card B – 480 seconds of arc for testing three, four and five year old children
- Card C – 240 seconds of arc for testing five year old children
- Blank card
- Pair of small pediatric polarized glasses

SETTING UP

- Have the child sit or stand to take the test in a well-lit, glare free area
- Arrange the child so that the cards are 16 inches from the child's eyes
- Make sure the cards are at the child's eye level
- Ensure it is 16 inches from the child's eyes to the cards

CONDUCTING THE TEST

The back of each card is labeled. Begin with card A (demonstration card). This card has a two dimensional smile face, and is used for training purposes.

STEP 1

Put the polarized glasses on the child. If a child wears glasses, place the polarized glasses over the glasses. Ask the child to point to or identify the smile face on card A. Tell the child the figure is “popping” off the card and ask the child to point to it. This allows you to be certain the child can identify the figure.

STEP 2

Next allow the child to look at card B and the blank card side by side at 16 inches, in front of the child at a 10 degree angle (top of card tilted back towards the screener.) Tell the child to point to the card with the smile face. If the child cannot successfully identify card B, stop testing.

STEP 3

Shuffle the cards behind your back to change the position of the smile face. Present the cards to the child side by side. Repeat a maximum of five times.

STEP 4

The child is successful if the child is able to identify the card with the smile face 4 of 4 or 4 of 5 presentations. The child is unsuccessful if he/she answers incorrectly one or more times.

STEP 5

For five year old children only: If a five year old successfully identifies 2 or more presentations of card B, replace card B with card C and repeat the same procedure again with card C and the blank card.

STEP 6

The child is successful if the child is able to identify the card with the smile face 4 of 4 or 4 of 5 presentations. The child is unsuccessful if he/she answers incorrectly one or more times.

REFERRAL CRITERIA

If a three or four year old child does not correctly identify card B on 4 out of 5 presentations.

If a five year old child does not correctly identify card C on 4 out of 5 presentations, and/or does not correctly identify card B on 4 out of 5 presentations.

OPTION

2

Stereopsis Visual Testing RANDOM DOT E (RDE)



EQUIPMENT

- Demonstration card
- Two testing cards
- Pair of small pediatric polarized glasses

SETTING UP

- Have the child sit or stand to take the test in a well lit, glare free area
- Measure the 5 foot testing distance and mark it using masking tape
- Make sure you hold the cards at the child's eye level
- Ensure it is five feet from the child's eyes to the cards

CONDUCTING THE TEST

❑ STEP 1

Show the child the raised E on the demonstration card. Tell the child the figure is “popping” off the card and ask the child to point to it. This allows you to be certain the child can identify the figure. Put the polarized glasses on the child. If a child wears glasses, place the polarized glasses over the glasses.

❑ STEP 2

Next allow the child to look at both test cards at 20 inches. Tell the child to point to the card with the figure. Repeat four times.

❑ STEP 3

When the child understands the task, move back to the testing distance of five (5) feet.

❑ STEP 4

Present the two test cards a total of four times. Shuffle the cards behind your back after each presentation. If the child cannot identify the correct card four out of four times, repeat steps 2 and 3. Be sure not to let the child see the backs of the RDE cards as you are shuffling or presenting the cards because that will tell him/her where the “E” is.

REFERRAL CRITERIA

If the child fails to correctly identify the figure four times at 5 feet, the child fails the stereopsis screening. Using the RDE, a child must identify the figure correctly four out of four times at a testing distance of 5 feet.

REFERRAL AND FOLLOW UP

A child should be referred to an eye care provider under any of the following circumstances

- If external observation indicates a condition that might be associated with a vision problem.
- If the child has failed any of the screening tests for visual acuity or stereopsis.
- If the child is untestable.

Summary of Reasons for Referral

TEST	REFERRAL CRITERIA
Observation	Observation is not a test. However, refer for any appearance or behavior concerns or complaints.
VIP single, crowded Lea Symbols® Visual Acuity screening test system at 5 feet	A child misses 2 or more symbols during presentation of the baseline cards; or the child misses 2 or more symbols on the disk during the test.
Lea Symbols® linear chart at 10 feet	Unable to identify 3 out of 5 symbols on the 20/32 line with each eye separately.
SureSight® Vision Screener	An asterisk (*) next to a reading on the screen.
Stereopsis Smile (PASS 2)	If a three or four year old child does not correctly identify card B on 4 out of 5 presentations. If a five year old child does not correctly identify card C on 4 out of 5 presentations, and/or does not correctly identify card B on 4 out of 5 presentations.
Stereopsis Random Dot E (RDE)	Unable to identify correctly 4 out of 4 times at a 5-foot distance.

REFERRAL PROCEDURES

Vision screening is a public health strategy used in a mass screening setting to efficiently identify children with or at risk for vision disorders. Screening will produce both over referrals and under referrals; however, for the benefit of the children being screened, errors toward false positives, i.e., over referrals, are preferred.

Screeners should monitor the accuracy of their referrals. One way this may be done is to compare the school screening results with the findings of the eye specialist examination. Not all appropriate referrals will result in treatment, but if there are frequent discrepancies between the screening and exam results, screening methods should be reviewed.

The following steps are recommended for an effective assessment program:

- Written notification of the screening results should be reported in a sealed envelope addressed to the parent or guardian of the child screened. This notification will inform the caregiver that the child has failed a vision screening and that a professional vision examination is recommended.
- Along with this notification, parents should receive a copy of the Eye Specialist Report (Appendix F), which can be completed by the examining doctor and returned to the referring party.
- Results of the child's vision screening should be entered on the Vision Screening Record and tracked by the screener.
- Children who failed the vision screening should receive follow up to assure proper treatment.

Forms used for vision screening and follow-up may be downloaded from the ODH Web site (<http://www.odh.ohio.gov>) or photocopied from the examples in the Forms section of this document.

appendix

A

REFERRAL RESOURCES

American Academy of Pediatrics-Ohio Chapter

The American Academy of Pediatrics (AAP) and the AAP-Ohio Chapter provide information on eye health and safety information at aap.org and a policy statement regarding eye examination in infants, children and young adults by pediatricians. For more information go to: <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;111/4/902.pdf>

Ohio Ophthalmological Society

The Ohio Ophthalmological Society (OOS) and the American Academy of Ophthalmology (AAO) provide information on eye health and safety through their EyeSmart program. For more details and downloadable brochures go to www.geteyesmart.org

Ohio Optometric Association

Members of the Ohio Optometric Association are eye doctors. Locate an eye doctor in your community at: www.ooa.org. Infants under the age of 12 months can receive an eye exam at no charge, visit www.infantsee.org for a list of doctors and additional information. Students assigned to an Individual Education Program (IEP) are required by law to have an eye exam, visit www.iepeyexam.org for details. Charitable eye care is provided through Vision USA (call 800-966-4466) or the Ohio Optometric Foundation (800-874-9111).

Prevent Blindness Ohio

Prevent Blindness Ohio has recently developed an internet portal targeted to children, teachers, healthcare professionals and parents/caregivers. Features of the website include eye

health and safety curriculums, information on access to low cost/free vision care, interactive activities for kids and adults, eye health fact sheets, preschool vision screening training information and registration and vision screening resources. The website can be accessed at: www.wiseabouteyes.org.

For more information for parents, guardians, and caregivers, Prevent Blindness America has printable fact sheets on children's eye health and several different eye disorders common to children. You can find these at: www.preventblindness.org/resources/fact_sheets.html

Save Our Sight

The Save Our Sight Fund was established by ORC 3701.21 (originally 3701.18) to provide early detection of vision problems in children and to promote good eye health and safety among children. Funded by donations contributed at local Bureau of Motor Vehicle offices when Ohioans apply for or renew their license plates, the program provides training, certification and equipment for children's vision screeners; protective eyewear for youth sports and school activities; eye health and safety programs for children; and information, resources and case management services to children diagnosed with amblyopia and their families. Visit www.saveoursight.org/ for more information or contact the program at sos@odh.ohio.gov

Sight for Students

Sight for Students is a VSP Vision Care sponsored program that provides free vision exams and glasses to low-income, uninsured children nationwide. Services are provided by a network of doctors that are affiliated with VSP. According to VSP, more than 50,000 children

receive free eye exams and glasses each year. If a child is in need of the Sight for Students services, eye care certificates can be provided by select community partners that work directly with children. Certificates are issued from VSP to community partners such as Boys & Girls Clubs of America, Head Start, National Association of School Nurses and the National Association of Community Health Centers. In Ohio, Prevent Blindness Ohio and the Ohio Optometric Association are also contacts for the Sight for Students program. Certificates can be used to see a VSP eye doctor for a comprehensive eye exam and glasses for children that meet the eligibility requirements for the Sight for Students program. This is a great program that allows eye care services to be available to children who would most likely not receive follow-up care following a vision screening. To learn more about VSP and the Sight for Students program visit www.sightforstudents.org and for information about receiving certificates through the program, contact Prevent Blindness Ohio at (614) 464-2020 or (800) 301-2020 (outside the 614 area code) or the Ohio Optometric Association at 800-874-9111.

Specialty Clinics

The Medical Specialty Clinic Program provides access to pediatric specialists for children in medically underserved areas of Ohio. Clinics are typically held in local county/city health departments. To find out if there is a vision clinic in your area go to the below web address or call 614-466-5332. www.odh.ohio.gov/odhPrograms/cfhs/medspec/medspec1.aspx

appendix
B

AGENCIES REVIEWING THE PRESCHOOL VISION SCREENING GUIDELINES

American Academy of Pediatrics–Ohio Chapter

Cleveland Sight Center

National Association of Pediatric Nurse Associates Practitioners (NAPNAP)

Nationwide Children’s Hospital

Ohio Department of Education

Ohio Department of Health

Ohio Department of Job and Family Services

Ohio Ophthalmological Society

Ohio Optometric Association

The Ohio State University College of Optometry

Prevent Blindness America

Prevent Blindness Ohio

VisAbility Services, Inc.

Vision and Vocational Services

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appendix

D CHILDREN'S VISION RISK FACTORS

The most frequently occurring preschool vision disorders of public health significance are amblyopia, refractive error and strabismus.

RISK FACTORS

There are many factors that can determine if your child is at high risk for vision problems. The following is a list of some of those factors.

- Child with a blood relative with a vision loss in one or both eyes before age 25 that was not caused by an injury and was not corrected with glasses.
- Child born more than six weeks before the expected due date; child spending any time in the neonatal intensive care unit, or the special care nursery; or child weighing less than 3 pounds and 5 ounces at birth.
- Birth mother with any of the listed health problems during pregnancy:
 - Rubella (German measles) Histoplasmosis Alcohol abuse
 - Herpes Toxoplasmosis Drug abuse
 - Cytomegalovirus Exposure to radiation AIDS
 - Venereal infection
- Birth mother taking any of the listed medications during the pregnancy:
 - Dilantin (for seizures) Accutane
 - Phenobarbital (for seizures) Medicine for cancer
 - Chloroquine (for malaria) Steroids
 - Coumadin (blood thinner) Quinine (for malaria)
- Child with any of the listed illnesses or injuries:
 - Meningitis/encephalitis Cancer Thyroid problems
 - Joint swelling, joint pain Diabetes Cerebral palsy
 - Brain tumor Eye tumor Leukemia
 - Herpes infection Albinism
 - Hydrocephalus Injury directly to eye or eye socket
 - Developmental disabilities Tan spots bigger than a quarter
 - Sickle cell disease Severe head injury
 - Early closing of skull bone Growing too fast or too slow
 - A lot of freckles under the arm pit or in the groin area
 - Problem with the brain that gets worse over time
 - Any illness treated with steroid shots, pills or liquid
 - Inability to do things child was once able to do
 - Weakness, along with problems relaxing muscles
 - Genetic problem (i.e. Down or Marfan's Syndrome)

appendix

E

TYPES OF VISION PROBLEMS

There are several types of vision problems. Some affect how sharply or clearly a child can see. Others affect the child's ability to use the eyes together and to develop good vision in both eyes. Different types of visual problems are described in this section.

Poor visual acuity

People who have poor visual acuity do not see as clearly as they should. There are two types of visual acuity—distance and near. When a person has poor distance visual acuity (for example due to nearsightedness or myopia), things that are far away seem blurry. When a person has poor near visual acuity, things that are close seem blurry. There are several different conditions, such as cataracts, refractive errors and strabismus that can cause a child to have poor visual acuity. The conditions are described in this Appendix.

The treatment for poor visual acuity depends on the cause. Amblyopia is the name for poor visual acuity in one or both eyes that cannot be improved immediately with glasses alone. Treatments for amblyopia include glasses, patching and eye drops. It is very important to find amblyopia as early as possible. The longer the eyes are not used properly, the harder it will be to develop good vision and improve the brain's ability to use the eyes together.

Loss of visual field

A person who has a loss of visual field does not see equally well in both eyes in all directions when the head and eyes are held still. A person with a loss of visual field may see well in front, but not well to the sides; this person is said to have tunnel vision. Another person with a loss of visual field may see well to the sides, below, or above, but not in the center; this person is said to have good peripheral vision, but poor central vision. Another may have islands of vision surrounded by "blind spots." Loss of visual field can be caused by a problem with the eyes, the nerve, or the brain. A child with a loss of visual field may need to have special help in learning how to use the part of the visual field that is intact.

Poor stereopsis (depth perception)

To have good depth perception, a person must be able to see well in each eye and have the eyes aligned well so that both eyes are working together. It is very important to find poor depth perception as early as possible. The longer it exists, the harder it will be for the brain to develop the ability to use the eyes together.

Poor color vision

A person who has poor color vision might have trouble matching colors or telling certain colors apart. It is very rare for a person to be unable to see colors at all. Poor color vision runs in families, and most people who have it are born with it. Boys are more likely to have poor color vision. It can also be caused by diseases that affect the eye or by certain prescription drugs. It usually cannot be corrected.

❑ **Poor visual perception**

Visual perception refers to the process of interpreting and organizing visual information. Visual perceptual skill is often subdivided into areas such as visual discrimination, visual memory, and visualization or visual manipulation. Visual discrimination involves the ability to attend to and identify a figure's distinguishing features and details, such as shape, orientation, color and size. Visual memory refers to the ability to remember a visual image. Visualization involves the ability to create a mental picture of a figure and is often assessed by evaluating a person's ability to mentally manipulate figures. Poor visual perception problems may occur in children who can see clearly (i.e. have 20/20 vision). They also can be caused by severe head injuries, infections that affect the brain or a lack of oxygen at birth. In some cases, poor visual perception can change over time.

There are many conditions that interfere with normal visual development. The most common ones are described in this section.

❑ **Genetic syndromes**

Some vision problems are part of a group of conditions (syndrome). Some syndromes, such as Marfan syndrome or Usher syndrome, run in the family. Other syndromes, such as Down syndrome, are caused by a genetic problem that occurs at the time of conception.

❑ **Prenatal illness in mother**

Some illnesses that a mother may have while she is pregnant can cause vision problems. Some examples are toxoplasmosis, rubella (German or three-day measles), cytomegalovirus, genital herpes, and syphilis.

❑ **Perinatal conditions**

Problems that occur around the time a baby is born can cause difficulties with vision. Some examples are prematurity, low birth weight, problems that cause a baby not to get enough oxygen at birth or being on a ventilator. Babies who weigh less than 3 pounds, 5 ounces at birth have four to five times the rate of vision problems than infants who weigh more.

❑ **Refractive errors**

When light enters the eye, it is bent so that it focuses on a place at the back of the eye called the retina. When light focuses correctly, it causes a clear image to be formed on the retina. A refractive error occurs when the light does not focus on the retina and a clear image is not formed.

There are three types of refractive error: myopia or nearsightedness (distance visual acuity worse than near visual acuity); hyperopia or farsightedness (near visual acuity worse than distance visual acuity); and astigmatism (poor distance and near visual acuity). A large difference between the refractive errors of the two eyes is called anisometropia.

❑ **Muscle Imbalance**

Each eyeball has six muscles connected to it. These eye muscles hold the eyeballs in place, and make the eyes move up, down, and to the side. When the muscles work correctly, the eyes move together. Strabismus, a form of muscle imbalance, occurs when a person's extraocular muscles do not work together properly.

When the eyes are not turned in the same direction, a child sees two images. The brain cannot make sense of both images at the same time, so it ignores the image from the deviating eye. If the image is ignored for too long, the visual acuity in that eye will decrease and depth perception will be impaired.

Types of muscle imbalances are esotropia (one eye turns in), exotropia (one eye turns out), hypertropia (one eye turns up), or hypotropia (one eye turns down). Sometimes the muscle imbalance is not obvious, because the brain works to keep the eyes together. Atropia can be constant or intermittent.

Muscle imbalances run in families, and most of the times are not associated with any other physical problem. In some cases, muscle imbalances occur when a nerve to the muscle is damaged, when the part of the brain that controls eye movement is damaged, or when one eye has poorer visual acuity than the other.

Treatment for strabismus depends on what causes it. Most muscle imbalances can be treated with glasses, eye drops, surgery, and in some cases eye exercises.

❑ **Nystagmus**

Nystagmus is a name for a condition that causes the eyes to move in a rhythmic, jerky manner. The eyes of most people with nystagmus move from side to side. Other people have eyes that move up and down, in a circle, diagonally, or in a combination of directions. It can be associated with other disorders, so children with nystagmus should be seen by an eye care provider as early as possible.

A child with nystagmus does not see objects moving, but does have blurry vision. The child may be able to quiet the eye movements by holding the head and eye in a certain direction, thus getting better visual acuity.

❑ **Cataracts**

Cloudiness in a part of the eye called the lens is called a cataract. This cloudiness scatters light as it enters the eye or keeps light from entering the eye. It is important for a young child with cataracts to be treated early, so that the visual system can develop normally. Cataracts can be caused by illnesses of the mother during pregnancy and from certain drugs used during pregnancy. It can be a part of a syndrome such as Down syndrome or Marfan syndrome. Cataracts can be treated by surgery. Afterwards, a child must wear a contact lens or glasses (if cataracts were removed from both eyes) to focus properly. Older children may be treated by a surgical procedure that involves implanting a lens within the eye (intraocular lens implant).

❑ **Retinal detachment**

The retina is a thin layer of tissue that lines the inside of the eye. Retinal detachment occurs when part of the retina is separated from the back of the eye and loses its source of nourishment. Blindness develops in the area of the visual field that relates to the part of the retina that is separated.

Retinal detachment can be caused by several conditions. Some examples are severe head injury, as seen in child abuse or shaken baby syndrome, or direct trauma to the eye. Usually surgery is needed and, if successful, some of the vision is restored.

❑ **Retinopathy of prematurity (ROP)**

ROP is a condition which can cause retinal damage, including detachment, in babies who are born several weeks before their due date. It appears to occur most often in infants with a low birth weight who have received oxygen treatment over a long period of time. When the retina is not fully developed, it is more likely to form abnormal blood vessels and tissue that can lead to retinal detachment. Laser surgery can be used in some cases to treat the retina and prevent retinal detachment; sometimes the retina detaches anyway, and more extensive surgery is required. It is important to follow a child who has been treated for retinopathy of prematurity, because the child remains at high risk for developing problems with visual acuity, muscle imbalances, and retinal problems in the future.

❑ **Retinoblastoma**

Retinoblastoma is the name of a malignant eye tumor that can cause death if it is not treated. Most retinoblastomas occur in children under 3 years of age. It is usually found when a doctor examines the eyes and notices a difference in the reflex coming from the back of each eye. It may not be noticed until it causes the eye to look cloudy or until the child develops a muscle imbalance. If the tumor is found very early, it is possible to shrink it with radiation. Sometimes, some vision can be saved. Often, the eye must be removed. An artificial eye can be placed in the eye socket to give the child a more natural appearance. Retinoblastoma can be hereditary.

appendix

F

FORMS

The following pages contain forms for preschool vision screening needs. Vision screening forms are also available in PDF format and can be downloaded through the Ohio Department of Health's web site at:

http://www.odh.ohio.gov/odhPrograms/cfhs/hvscr/hv_forms.aspx

Click on **Vision Screening**.

Forms:

1. Vision Screening Information Letter (HEA4724)
2. Vision Referral Letter (HEA4708)
3. Vision Screening Record (HEA4715)
4. Vision Screening Follow-up (HEA4714)
5. Eye Specialist Report (HEA4713)



To: Parents

From: _____,
Preschool Nurse/Administrator

Vision screenings will be administered on _____ to all preschool students.

Why is it important to have your child's vision screened?

To identify if your child has, or might be at risk for, vision problems.

Vision screening will consist of any of the following:

1. Observation: Any appearance, frequent behavior, or complaints by the child that is heard or observed by the staff.
2. Monocular Distance Visual Acuity test: A screening test to help determine how well the child sees small objects at a distance.
3. Stereopsis test: A screening test to help determine how well a child's eyes are working together. It is often used to detect amblyopia (lazy eye).

If your child passes the vision screening, you may not be contacted by the school nurse. A vision screening provides only a snapshot of how your child performs on the day the test was administered and is not a substitute for a complete eye exam by an optometrist or ophthalmologist.

If your child fails the screening, you will be informed of test results.

Please direct any questions to _____ at the following phone number _____.

Date
Address
City, State, Zip

Dear Parent:

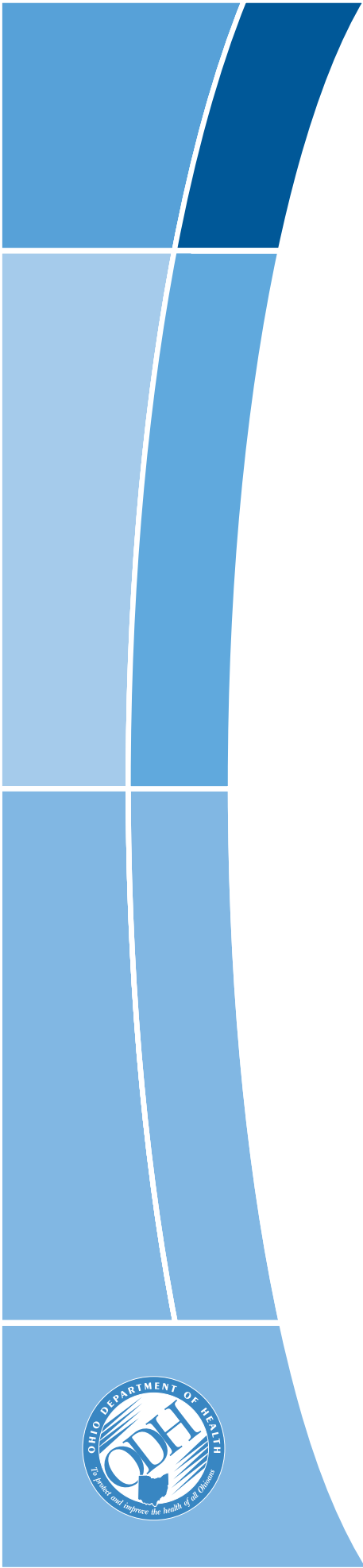
Our preschool routinely performs vision screenings to identify students who have vision problems or might be at risk for vision problems. The vision of students is vital, especially for classroom learning, so it is important to identify any barrier to learning that can be corrected.

Your child's preschool vision screening results suggest that he/she should have a complete professional eye exam. A vision screening provides only a snapshot of how your child performs on the day the test was administered and is not a substitute for a complete eye exam by an optometrist or ophthalmologist. Services may be available for those unable to pay.

Enclosed is a referral form to take to your eye doctor. It is important for us to know the outcome of the professional examination, so please return the form to us with the results of the exam.

Sincerely,

Administrator



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