Primary Eye Care and Training Manual Summary

reaching out to
people and
programs near
and far to
promote healthy
eyes and
clear vision
for all
Primary Eye Care

Primary eye care is considered the “first encounter” with eye care. Often, the only eye care offered to many people in poor and rural communities is a vision screen. About one billion people need an eye exam but do not have access to an eye care provider.

The Need for Eyeglasses

One of the most widespread eye problems is simply the need for eyeglasses. At least 900 million people in the world today need a correction for visual refractive errors (i.e., need eyeglasses). However, many are unable to obtain a prescription because of geographic or financial barriers. Despite abundant good will on the part of eye care professionals and medical institutions to reach out beyond their usual service areas to individuals and populations in need, only a tiny fraction of the need is being met.

Uses for This Manual

Primary Eye Care Assessment:

1. Measuring visual acuity, screening for binocular dysfunction and color vision problems;
2. Determining which patients have refractive errors and need eyeglasses;
3. Recognizing symptoms of eye diseases;
4. Promoting eye health
How the Eye Works

Your eyes and brain work together to make it possible for you to see. Light is reflected from objects onto the front surface of your eye, the cornea. The cornea bends the light, which then passes through fluid called the aqueous humor, through the pupil, and to the lens. The lens, which can change its shape, helps to focus light onto the retina at the back of the eye. On the retina, light forms an upside-down image on the cones and rods, the light sensitive receptors in the eye. The cones and rods send images to the brain via the optic nerve.

Shortly after leaving the eye, the optic nerves from each eye cross and separate, sending their fibers to receiving and analytical stations in the brain. In effect, the brain receives messages from both eyes. Besides interpreting the visual input, if movement of both eyes is coordinated, the brain fuses images from each eye together to form one three-dimensional image.
Common Sight Problems

**Visual Acuity**

| Normal (Emmetropia) | **Sight** - Objects appear clear from a distance of 20’ (or 6 meters) and at reading distance.  
**Cause** - Lenses of the eye can change shape, for the purpose of converging light rays on the retina at the back of the eyeball, also called ‘accommodation’. This capability enables clear vision at close range. |

**Refractive Errors**

| Farsightedness (Hypermetropia) | **Sight** - Difficulty seeing up close. In some cases, difficulty seeing at a distance.  
**Cause** - Eyeball is either shorter or smaller than average. Not a disease. Light rays do not converge at retina but rather at an angle that converges in back of retina.  
**Corrective lenses** – If only farsighted correction is needed, then spherical lenses will correct the refractive error. If patient is farsighted plus astigmatic, then compound lenses are needed. Compound lenses combine both spherical and cylindrical correction.* |

| Nearsightedness (Myopia) | **Sight** - Difficulty seeing at a distance.  
**Cause** - The eyeball is longer or larger than average. Not a disease. Light rays converge in front of the retina, rather than on the retina.  
**Corrective lenses** – If only nearsighted, then a spherical lens will correct. If patient is nearsighted plus astigmatic, then compound lenses containing both spherical and cylindrical corrections are needed.* |

| Astigmatism | **Sight** - Difficulty seeing some objects while other objects are seen clearly. Difficulty seeing objects near and far.  
**Cause** –Non-round cornea results in uneven refraction of light.  
**Corrective Lens** –Cylinder. When patient is either near or farsighted then compound lenses will be used that combine cylindrical and spherical correction.* |

**Other Problems**

| Presbyopia | **Sight** – Difficulty seeing objects placed near the eye  
**Cause** – Loss of elasticity of the focusing lens inside the eye (loss of accommodation), commonly begins when patients reach their 40’s.  
**Corrective Lens** –If correction needed for reading or close work only, then magnification will be added to a spherical lens. When patients have blurred distance vision in addition to presbyopia and want to wear glasses for both near and distance vision, then bifocals will be prescribed. |

| Binocular Misalignment (Strabismus) | **Sight** –Double vision or suppressed vision in one eye.  
**Cause** – Poor coordination of muscles that move the eyes or inability to fuse images from two eyes.  
**Corrective Techniques** –Vision training, glasses with prism components, surgery. Treatment before age six is important. |

| Color Vision Deficiency | **Sight** – Inability to see some colors, most commonly red and green.  
**Cause** – Usually genetic in origin. Affects 1 out of 8 males and 1 or 30 females.  
**Corrective Techniques** – none unless due to either pathology or medication. |

*When compound lenses are not available, then spherical lenses may be substituted which contain an additional correction beyond the amount required to correct the patient’s nearsightedness.
Professional Eye Exams
Recommended Schedule

<table>
<thead>
<tr>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Infants - Shortly after birth and again at six months</td>
<td>• Adults with good general health - every two or three years</td>
</tr>
<tr>
<td>• Starting at age 4 or 5 – every year</td>
<td>• Patients over 50 - every year</td>
</tr>
<tr>
<td>• Also, when parent suspects eye related problems</td>
<td>• Patients with risk factors for diabetes, glaucoma, cataracts –every year</td>
</tr>
</tbody>
</table>

Benefits

Address health problems

- Early detection of eye conditions which are treatable if addressed in time. Ex. Amblyopia, also called lazy eye, can be treated up to the age of six.
- Early detection of other health conditions of which the patient may not be aware. Ex. Diabetes and Glaucoma. Although there are no cures for these conditions at present, the patient can take steps to prevent blindness by adopting a regimen of medication and other strategies in partnership with medical personnel.
- For chronic conditions involving either the eye or general health, the exam provides patient with feedback, support, and treatment, if applicable, for managing the condition.

Provide clear vision using corrective lenses

- **Refractive errors** – Exams are used to measure the patient’s refractive errors and, if needed, to prescribe the lenses required to correct blurred vision. Refractive errors are not due to disease but rather the shape and size of the eyeball.
- **Presbyopia** – Exams are used to detect if the patient’s ability to see objects up close is decreasing. Presbyopia is common starting around age 40. When corrective lenses for Presbyopia are combined with corrective lenses for farsightedness, the glasses are called bifocals.

Learn how to ensure eye health and safety

- Learn strategies that protect the eyes such as good nutrition, good hygiene, protection from UV rays, and injury prevention.
# Vision Assessment
## Protocol for Primary Eye Care Examination*

### When to Use:
- Examiner is assessing vision in a *Vision Station*, at a health center or in the field.
- Examiner may be trained to perform basic first aid.

### 1. Review Patient History
- Record patient history on Patient Record form.
- Determine time of last professional eye exam.
- Ask patient if he/she is taking any medications
- Ask patient if he/she has concerns or questions.

### 2. Assess Visual Acuity
- Check distance vision and near vision. See procedures on pages 14-15. Record results on Patient Record form.
- If either distance OR near vision is blurred (worse than 20/30 for distance vision), then conduct pinhole test on page 17 and record.
- If vision improves during pinhole test, error may be improved with glasses

### 3. Screen for Binocular Dysfunction
- Cover Test and Versions Test. See pages 18 and 19
- Record results on form.

### 4. Check eye for disease or injury
- Check all eye and surrounding structures for evidence of disease or trauma. Screen for color vision defects. Procedure on page 21.
- Examine nape of neck for Acanthosis Nigricans (Type II Diabetes). Procedure on page 22.
- If problem(s) is identified, then record on form and refer.

### 5. Give eye health and safety information

### 6. Make referral as needed
- Professional Optometrist may refer if any of the criteria is met.

### 7. Wrap-up Interview
- Review findings of exam with patient. If giving a referral, give patient the reason. Discuss the patient’s concerns and questions.
- Encourage patient’s family and friends to make appointments.
- Complete “Patient Record” form.
Visual Acuity Charts

- Use standardized charts to measure visual acuity. Two charts commonly used to measure distance vision are the Snellen chart and the Tumbling E chart shown below.
- Visual acuity is measured in terms of the “Snellen Fraction” named for the physiologist who invented it. The fraction “20/20” denotes normal or average vision.
- The number above the dividing line represents the testing distance of 20 feet (equivalent to 6 meters)
- The number below the dividing line indicates the number of feet at which a line of letters can be seen by persons with normal vision.

Example: Individual has 20/40 visual acuity. Individual was tested at 20 feet from chart however the smallest line of letters he/she could read was the line marked 40. Persons with normal vision could read that same line at 40 feet.

<table>
<thead>
<tr>
<th>Snellen</th>
<th>Tumbling ‘E’</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Snellen Chart" /></td>
<td><img src="image2.png" alt="Tumbling E Chart" /></td>
</tr>
</tbody>
</table>

Includes red and green lines that give clues regarding patient’s color perception.
Actual size: 21 ½” x 11 ½”

Useful with patients who do not recognize the letters of the alphabet
Actual size: 21½” x 11½”
Procedure: Measuring Distance Vision

| Purpose: | To determine the smallest line of letters the patient is able to read at a specified distance with each eye. Children, starting at age 4, can take this test as well as adults. |
| Illumination: | Make sure the eye chart is well lit and no reflection is coming off the chart. |
| Target: | Snellen Chart (Ex. Letters, Tumbling E, numbers, pictures, Landolt C). |
| Distance: | 20’ or 6 meters from chart to patient |
| Lenses: | Patient first reads chart without corrective lenses. Test is repeated with patient wearing corrective lenses as needed. |
| Equipment: | Opaque Occluder |
| Form: | Patient Record form and pencil to record results |
| Instructions to Patient: | If patient is wearing prescription glasses, then ask him/her to take them off. Explain to patient that you will indicate the letters (numbers, Tumbling E’s, etc.) on different lines of the chart one at a time. He/she should tell you what they see. In the case of Tumbling E charts, it is helpful to give the patient a large cut out letter “E” and ask them to respond by turning the letter to match the direction of the letter they see on the chart. (This method works well when the examiner and patient do not speak the same language.) |

Steps: 1. Test right eye first. Cover left eye with occluder. Be sure that patient is using only the right eye.
2. Test vision by starting with the largest letters first. Proceed down the chart to the smallest letters the patient can see. It is advisable to skip lines so as to identify the smallest line that the patient can read.
3. Record the smallest line in which the patient can see at least half of the letters. See Record section below.
4. Repeat the test with the left eye.
5. Repeat the test with patient wearing his/her corrective lenses.
6. If patient cannot see largest letters, then follow the procedure in Notes section.

Interpretation of Test Results: • Normal Vision: 20/30 or better* • Subnormal Vision: worse than 20/30 • Blindness: 20/400 or less

*Patient may benefit from glasses, if available. 20/30 or better is an “acceptable” level of visual acuity but with the proper resources vision may still be improved.

Notes: If the patient cannot read the largest letters, then use the following test sequence. Failure at one level of the test requires testing at the next level.
1. Ask the patient to walk toward the chart and report when the largest letter is legible. The distance from the chart would be the number of the acuity fraction, i.e. 3/400.
2. The patient is seated and asked to count the examiner’s hand. Record as “finger counting at 3 feet.”
3. Ask the patient to tell whether the examiner’s hand is moving or still. Record as “hand movement at 3 feet.”
4. The patient is asked to indicate whether a light source is on or off. If the patient is accurate, it is recorded as “light perception”; if not, “no light perception.”

Record: The patient’s visual acuity is measured for the right eye, left eye and both eyes. Visual acuity is recorded in one of the following ways:
1. Smallest line patient can read at least half of the letters along with number of letters missed on that line. Ex. 20/40 – 2 --or--
2. Smallest line patient can read completely, along with the number read correctly on that next line. Ex. 20/20 + 2 i.e. patient can read all the letters on the 20/20 line and can also read 2 letters on the 20/15 line. So credit is given for the 2 letters read on the line below the 20/20 line.
**Procedure: Measuring Near Vision**

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To assess visual acuity using objects at a reading distance. This procedure is used with adults and children, starting at age 4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Make sure the eye chart is adequately lit and that no reflection is coming off the chart.</td>
</tr>
<tr>
<td>Target:</td>
<td>Near Point Card (Reduced Snellen chart) or usual reading material. Young children may require a card with symbols (drawings of animals etc.) without letters.</td>
</tr>
<tr>
<td>Distance:</td>
<td>14” - 16” or normal distance for patient to use when he/she reads or works at close range</td>
</tr>
<tr>
<td>Lenses:</td>
<td>First test without corrective lenses and then with corrective lenses.</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Opaque Occluder</td>
</tr>
<tr>
<td>Form:</td>
<td>Patient Record form and pencil to record results.</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>If patient is wearing corrective lenses, then ask him/her to take them off. Ask patient to read the Near Point Card (Reduced Snellen chart) or reading material at 14” – 16” with one eye at a time, then with both eyes. Repeat wearing glasses. (Hyperopes, persons with blurred near vision, cannot see close without them.)</td>
</tr>
</tbody>
</table>

**Steps: Using Near Point Card**

1. Test right eye first. Cover left eye with occluder. Be sure that patient is using only the right eye.
2. Test vision by starting with the largest letters first. Proceed down the chart to the smallest letters the patient can see. It is advisable to skip lines so as to identify the smallest line that the patient can read.
3. Record the smallest line in which the patient can see at least half of the letters.
4. Repeat the test with the left eye.
5. If patient wears corrective lenses, have patient wear glasses and repeat steps 1 – 4.
6. Record results on Patient Record form.

**Using Other Targets**

1. Same as above
2. Test vision by asking patient to hold target at range in which material is clear.
3. If patient reports that he/she cannot clearly see target at any range when holding the target, then record on the form that patient needs magnification lenses to see at near.
4. If patient reports that he/she can see target clearly, ask patient to demonstrate the distance(s). Record on the form the smallest line seen clearly on the Near Point card.

**Interpretation of Test Results:**

- **When using the near point card:**
  - Normal Vision = 20/20
  - Subnormal Vision: Less than 20/20 depending on age

- **When using reading material - normal = able to see familiar reading material without magnification**

- **When using non reading material - normal = able to see target at reading distance (approx. 14”-16)**

**Notes:**

Nearsighted patients will generally see better at near without glasses. Farsighted patients have difficulty seeing up close or cannot see at all up close without their glasses. Therefore, patients should be tested both with and without their glasses. Presbyopes who are also myopic may be able to see clearly at near while not wearing their prescription for distance.
Near Vision Assessment

The smallest type (4.5 pt. type) on a near point card should be seen clearly through the individual’s prescription glasses or without glasses for those with 20/20 vision, when the card is viewed at 14 inches in moderate lighting conditions. In order to see the small type clearly, older adults may need to increase the distance between the eyes and the card, or use magnification (plus power lenses). Plus lenses may be an “add” applied to the distance prescription with bifocal eyeglasses, or reading glasses may be indicated for those not needing a distance prescription.

For children, dispense the lowest power of lenses that offer the best clarity when the card is viewed at 14 inches.

This near assessment is especially important for children who are suspected to have difficulty reading or seeing up close (hyperopes). A children’s near vision card with symbols is used for those who cannot read letters or words, (Fig. A). The smallest line is equivalent to 20/30 near vision at 14 inches, which should be sufficient for good reading performance in school. Note that children with astigmatism may also have difficulty reading small print, unless the astigmatism is corrected with cylindrical lenses.

Figure A  (Example of children’s near point card. This example lacks clarity due to the photocopying process. Not intended to use with patients.)

Figure B  Example of Near point card (side A)  Figure C  Example of Near point card (side B) Not actual size
Procedure: Pinhole Occluder Test

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To determine if patient’s visual acuity would be improved using corrective lenses. Improved sight when viewing through the occluder indicates patient would benefit from corrective lenses.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Make sure the eye chart is well lit and that no reflection is coming off the chart.</td>
</tr>
<tr>
<td>Target:</td>
<td>Standard acuity chart such as Snellen, Tumbling ‘E’, etc.</td>
</tr>
<tr>
<td>Distance:</td>
<td>20’ or 6 meters</td>
</tr>
<tr>
<td>Lenses:</td>
<td>Read without corrective lenses. Repeat wearing corrective lenses.</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Pinhole occluder</td>
</tr>
<tr>
<td>Form:</td>
<td>Patient Record form and pencil to record results</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>If patient is wearing prescription glasses, then ask him/her to take them off.</td>
</tr>
</tbody>
</table>

Steps:

1. Test right eye first. Cover left eye with cardboard or cup. Ask patient to read a line on visual acuity chart such as Snellen or Tumbling ‘E’. Ask patient if his/her sight is the same through the occluder.
   - If improved, then patient could probably benefit from corrective lenses.
   - If not improved, then patient would not benefit from corrective lenses.

2. Test left eye.

3. Repeat steps 1 and 2 wearing corrective lenses.

4. Record results on Patient Record form.
Procedure: Screening for Binocular Dysfunction  
(Cover / Uncover Test)

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To observe how well the eyes work together. Early detection and treatment of problems with binocular coordination can prevent amblyopia (reduced visual perception). The test for binocular vision is called the Cover/Uncover Test. This test should be performed after the visual acuity test.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Ordinary room light</td>
</tr>
<tr>
<td>Target:</td>
<td>Standard acuity chart such as Snellen, Tumbling ‘E’, etc.</td>
</tr>
<tr>
<td>Distance:</td>
<td>20’ (or six meters) from patient to acuity chart</td>
</tr>
<tr>
<td>Lenses:</td>
<td>Patient wears corrective lenses, if applicable</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Acuity chart such as Snellen or Tumbling ‘E’</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>When asked, fixate on target, don’t move head and don’t look away.</td>
</tr>
</tbody>
</table>

Steps: Cover/Uncover Test

1. Test right eye first. The patient is asked to look at the target, the large “E” on top line of the acuity chart at 20’ and maintain fixation with both eyes.
2. The left eye is then covered while telling the patient not to lose fixation with the uncovered (right) eye. The right eye is observed for movement.
3. Note if any movement is detected, and if possible, indicate whether the movement is consistently towards the nose, or towards the ear.
4. Test the left eye. Repeat steps 1 –3 with the right eye covered and look at possible movement in the left eye.
5. Then repeat for each eye using the near target (examiner’s nose at a distance of 3’ to 5’).
6. Any movement of either uncovered eye should be recorded on form and a referral should be made to an eye doctor for full assessment of binocular function.
7. The examiner records “pass” or “fail” on Patient’s Record form, and those who fail are referred for a complete eye exam.
Procedure: Screening for Coordinated Eye Movement (Versions Test)

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To observe how well the eyes work together. Early detection and treatment of problems with binocular coordination can prevent amblyopia (reduced visual perception). The test for coordinated eye movement is called the Versions Test. This test should be performed after the visual acuity test.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Ordinary room light</td>
</tr>
<tr>
<td>Target:</td>
<td>Standard acuity chart such as Snellen, Tumbling ‘E’, etc.</td>
</tr>
<tr>
<td>Distance:</td>
<td>Versions – 3’ to 5’ from patient</td>
</tr>
<tr>
<td>Lenses:</td>
<td>Patient wears corrective lenses, if applicable</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Acuity chart such as Snellen or Tumbling ‘E’</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>When asked, fixate on target, don’t move head and don’t look away</td>
</tr>
</tbody>
</table>

Steps: Versions Test

1. The patient is asked to look at the examiner’s finger and follow the finger with both eyes without moving the head as a wide rectangle is traced through the air. For children, use a puppet.
2. The examiner watches the patient’s eyes, to ascertain that both eyes follow the finger and work together throughout the sideways and up and down movements.
3. Refer to appropriate eye professional if eyes don’t follow together.
4. The examiner records either “unrestricted” or “restricted” on Patient’s Record form.
Procedure: Screening for Limitations of Visual Field

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To assess whether limitations are present in the field of vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Ordinary room light</td>
</tr>
<tr>
<td>Target:</td>
<td>Standard acuity chart such as Snellen, Tumbling “E”, etc.</td>
</tr>
<tr>
<td>Distance:</td>
<td>1 to 2 feet from patient’s head</td>
</tr>
<tr>
<td>Lenses:</td>
<td>Patient does not wear corrective lenses</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>Ask patient to report when fingers are seen and how many fingers are visible</td>
</tr>
</tbody>
</table>

Steps:

1. Test right eye first. Tell patient to close or cover left eye. Patient stares straight ahead to the large letter at the top of the acuity chart.
2. Examiner places one of his/her hands behind the patient’s head. With either one or two fingers showing, the examiner brings his/her hand around the side of the patient’s head to the front.
3. Patient reports when the number of fingers is visible and the number seen.
4. Examiner repeats the same movement on the other side of patient’s head. The movement is repeated two more times
   - over patient’s head
   - under patient’s head
   In this way, each quadrant of the patient’s potential field of vision is tested, one quadrant at a time.
5. Repeat with left eye.
6. Record any difficulties with visual field on Patient Record form. If found, refer to an eye doctor for a full assessment.
Procedure: Screening Color Vision

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To determine whether a complete color vision assessment is necessary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Ordinary room light</td>
</tr>
<tr>
<td>Target:</td>
<td>Color Vision test plates</td>
</tr>
<tr>
<td>Distance:</td>
<td>Near, about 14” to 16”</td>
</tr>
<tr>
<td>Lenses:</td>
<td>Patient wears corrective lenses, if applicable</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Color vision test plates</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>Read numbers or letters on test plates and tell examiner</td>
</tr>
</tbody>
</table>

Steps:
1. Patient is instructed to inspect various standardized color vision plates and respond to examiner's questions.
2. Examiner asks the patient to say the number or letter seen.
3. If patient makes one or more errors in reading plates or any complaint about color vision, then refer to eye doctor for complete examination.
4. Examiner records either “pass” or “refer” on Patient’s Record.

Notes:

Color Vision Plates
Color vision plates may be ordered from any ophthalmic supply firm. Request pseudo-isochromatic plates for testing color perception. Care should be taken when handling the plates so that they are not smudged with fingerprints. If Color Vision Plates are not available, test whether the patient correctly identifies the red and green lines on the Eye Chart. Red-green color deficiency is the most common type of color blindness.

Causes of Color Blindness
Color blindness is usually caused by a genetic defect in the cone cells in the retina. If color blindness is detected in only one eye, then cause may be pathology instead of genetics. If color blindness develops, the cause may be medication the patient is taking.
Procedure: Screening for Acanthosis Nigricans

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To detect early symptom of Type II Diabetes Mellitus, a major cause of blindness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Moderate</td>
</tr>
<tr>
<td>Instructions to Patient:</td>
<td>Explain to patient that the back of the neck will be examined.</td>
</tr>
</tbody>
</table>

Steps:
1. Look at the nape (back) of the patient’s neck for a darkened band.
2. Distinguish between birthmarks and Acanthosis Nigricans, which has a raised velvety texture.
3. If Acanthosis is present, alert the patient that this mark is often an early sign of Type II Diabetes. Encourage patient to see a doctor to learn how to manage the disease and prevent blindness. Patient should also have their eyes examined regularly by an eye professional.
4. Examiner records either “pass” or “refer” on patient’s record.

Note: This darkened band is often mistaken for a birthmark or dirt.
Eye Health & Safety

Preventive Practices
Many of the problems that affect the eyes are preventable by practicing appropriate hygiene, good nutrition and basic preventative steps. Prevention is directly related to people’s behavior and the choices they make in how they live their lives. Good health education can lead to making healthier behavior choices.

| Hygiene | Risk – Eye infections and maternal gonorrhea. Note: Maternal gonorrhea is a venereal disease; blindness in the newborn is prevented with antiseptic or antibiotic therapy.  
Preventive Steps –  
Do not share: towels, handkerchiefs, bandannas, bed pillowcases and linens, or cosmetics  
Wash hands: prior to and after touching the eye or playing with children  
Do not wipe sweat from eye using work shirts or other work clothing to prevent exposure to dust, pesticides and contaminants.  
Face Washing: frequent washing of face will discourage face-seeking flies which carry trachoma in many parts of the world.  
Household: Proper disposal of rubbish and feces and moving livestock away from houses will reduce the number of flies.  
Entire family needs to cooperate regarding household hygiene. |
| UV Protection | Risk - Excessive and unprotected exposure to ultraviolet (UV) radiation may contribute to or worsen Pterygium, cataracts and macular degeneration.  
Preventive Steps – Wear sunglasses or safety glasses with 100% UV blockage and wide brim hat |
| Injury Prevention | Risk – Burns that damage cornea are caused by household cleaners, pesticides, fungicides and fertilizers. Also debris in the eye, traumas to the head and infections resulting from traumas.  
Preventive Steps – Use safety equipment properly:  
• Wear ANSI-approved, impact-resistant safety glasses or work goggles  
• Use 100% Ultraviolet blockage sunglasses or goggles  
• Use well-fitting cap with a strong brim  
• Stay alert and do not using audio equipment that hinders hearing |
| Nutrition | Risk – Vitamin A deficiency leads to night blindness, dry eyes, and pain in the eyes. Vitamin A deficiency is the leading cause of non-infectious blindness in children worldwide. Deficient diets also impair healing and recovery from injuries and infections.  
Preventive Steps - Eat foods rich in Vitamin A such as red, yellow, and green vegetables, fruits and diary products. Eat a well balanced diet overall, including an adequate daily intake of protein. Diabetics should eat foods recommended to manage their disease. |
Procedure: Measuring Pupillary Distance (PD)

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To determine the distance between the pupils when fixated on a distance object (Distance PD) and on a near object (Near PD). When eyeglasses match the PD of the patient, the patient sees through the optical center of the lenses without straining.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination:</td>
<td>Moderate</td>
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<tr>
<td>Target:</td>
<td>Penlight</td>
</tr>
<tr>
<td>Distance:</td>
<td>14”</td>
</tr>
<tr>
<td>Lenses:</td>
<td>None</td>
</tr>
<tr>
<td>Other materials:</td>
<td>Millimeter ruler, pen, and patient record</td>
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<tr>
<td>Instructions:</td>
<td>Tell patient to fixate at the penlight with both eyes open and to stay still.</td>
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To measure Near Pupillary Distance (P.D.)

1. Examiner holds penlight close to his/her left eye 14” in front of the patient. Examiner closes his/her right eye.
2. Examiner tells patient to look at the penlight with both eyes open.
3. Examiner holds a centimeter ruler in front of the patient and aligns the zero on the ruler with the outer edge of the patient’s right iris.
4. Examiner finds the Near P.D. by noting the distance between
   • the outer edge of the patient’s right iris and
   • the inner edge of the patient’s left iris. See diagram below.
5. Record the Near P.D.

Examiner and Patient: Be careful not to move ruler or head between measuring Near P.D. and Distance P.D.

To measure Distance Pupillary Distance (P.D.)

1. Examiner moves penlight to just below his/her right eye. Examiner closes his/her left eye.
2. Examiner tells patient to keep looking at the penlight with both eyes open.
3. Examiner finds the Distance P.D. by noting the distance between
   • the outer edge of the patient’s right iris where the ‘zero’ on the ruler is placed as shown in the diagram below.
   • the inner edge of the patient’s left iris.
   This is the ‘Distance P.D.’ Without moving the ruler now the patient is asked to look at the penlight just below the examiner left eye.
4. Examiner records the Distance P.D. (Same two points as in step 3)

Notes: P.D. is usually within a range of 55 to 75 centimeters. Near P.D. is always less than Distance P.D. and the difference is typically approximately 3 centimeters.

<table>
<thead>
<tr>
<th>Record:</th>
<th>Near P.D.</th>
<th>Distance P.D.</th>
</tr>
</thead>
</table>

Patient's Right Eye | | Left Eye |

| Millimeters | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80* |

Near P.D.________ Distance P.D.________

Basic Primary Eye Care Techniques
How to make and apply an eye bandage (patch)

It is often necessary to cover a person's eye before sending him or her to a hospital or to a physician. Other times it is necessary to change the bandage for a person who has had an operation. What should you do?

1. Do not touch the eye with your hands
2. Wash your hands very well with soap and water
3. To cover the eye, use sterile gauze or a very clean cloth cut in a 2 ½ inch (6 centimeter) square
4. Place 2 or 3 small squares over the eye, and tape them as illustrated in the drawing
5. Before applying the dressing, ask the patient to close both eyes, so he or she does not move the gauze or tape.
How to evert (turn out) the upper eyelid

1. Look for the foreign body on the eyeball without lifting the upper eyelid
2. If you cannot find it, take the upper eye lid between the thumb and forefinger
3. Lift the eye lid so it stays on the match stick and with the entire conjunctiva in view, look for the foreign body
4. When you have found it, carefully remove with a clean cotton swab or the tip of a clean cloth