

This guide is a teacher's guide for use in pre-k classroom:

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Our Vision Is Vision®

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Preface

The *Play It Safe With Your Eyes* curriculum is designed to be used by teachers to guide them in the preparation of lessons for educating students on the eye, vision, and how to protect their vision. The curriculum is also aligned with the Ohio Early Learning and Development Standards and the Common Core Standards.

The *Play It Safe With Your Eyes* curriculum has been separated into five lesson topics. Each topic contains a lesson objective, lesson content, and key points of discussion. The lesson content provided has been created for the teacher and used by the teacher in customizing lessons to meet their students' specific needs. It is believed teachers know their students best and therefore would best be able to extract and individualize information for their classroom needs. Readings, Web sites, and activities have been outlined to support the lesson content and expand learning opportunities. These activities have been created specifically for children in preschool. A master for duplication has been provided where appropriate.

The curriculum is divided into two main sections: lesson and resources. All lessons are followed by: a reading list, Web resources, and activities. The necessary handouts and overhead materials for each activity are provided immediately following that activity.

RESOURCES

It is anticipated that it would require one full week to cover lessons one through five or the lessons could be conducted over the course of 3 to 4 weeks. Each lesson can also stand on its own. Each lesson would include an overview, an activity, discussion, and follow-up requiring approximately 20 minutes of class time.

Lesson 1: Importance of Sight



Six year old Jason takes a good look at his pupils.

Summary

The Importance of Sight emphasizes the role of vision in the realm of the five senses. If we are unable to use our vision, we can still obtain information through our other senses. The following activities will allow your students to experience the important role that eyes plays for us to understand our surroundings.

Vocabulary:

- Explore
- Primary Colors
- Senses
- Sight
- Smell
- Sound
- Taste
- Touch

Lesson Objective:

- Students will explore all of the five senses and how they work together to form a whole picture.

Teacher's Information**Five Senses**

Our senses allow us to interact and to explore the world around us. Our eyes view the variety of colors and shapes in our environment. Our nose smells all of the sweet and stinky odors in our surroundings. Our ears hear the sweet songs and sounds. Our fingers touch the textures of different objects. Our tongue tastes the sweet or bitterness of the food that we eat. Our senses work together, like a puzzle to complete images, so we know what we are experiencing. If we ever lose a sense the other senses will grow stronger in its place. But the picture will never be fully completed.

Sight

Sight is our top sense. We can see more colors and better detail than most animals can. However, our vision is terrible in darkness. Our eye is a 1 inch wide ball of clear jelly-like substance that works like a camera. Light enters through the pupil (a hole) and is focused by a lens on to the retina (a sheet of light-sensitive cells in the back of the eye). These cells detect the color and strength of the light and send signals to the brain, which builds an image.

Hearing

Hearing is our ability to sense invisible vibrations in the air; sound. The odd shape of the outer ears funnels sound and helps locate it. The sounds pass along a thin canal to the middle ear, where a miniature drum and a set of tiny levers transmit the vibrations from the air to liquid in the inner ear.

Smell

Smell is the ability to sense odor molecules floating in air. Smell is more important than you might think. The flavor of food actually depends more on smell than taste. That is why when you are sick and cannot breathe out of your nose, food does not taste correctly. The smell molecules are recognized by a patch of neurons located high up in each nostril. When odor molecules bind to a matching neuron, it triggers a signal. The average person can recognize 4,000 different smells. If someone trains their nose to recognize smell they can recognize about to 10,000 different smells.

Taste

Taste is your ability to identify simple chemicals inside your mouth. The chemicals dissolve in your mouth and trigger taste buds on your tongue as you chew. The most known tastes are sweet, salty, bitter, and sour.

Touch

Touch receptors cover our entire body. Different receptors are able to identify a variety of types of touch, such as light pressure, heavy pressure, hair movements, and vibrations.

Reading List

Look, Listen, Taste, Touch, and Smell: Learning About Your Five Senses by Hill Nettleton (Picture Window Books, 2006)

My Five Senses by Aliko (HarperFestival, 1991)

Sense Suspense by Bruce McMillan (1994)

The 5 Senses (Let's Learn About) by Nuria Roca (Author), Rosa M. Curto (Illustrator)

The Five Senses: Hearing by Maria Ruis (Barron's Educational Series, Inc., 1985)

The Five Senses: Sight by Maria Ruis (Barron's Educational Series, Inc., 1985)

The Five Senses: Smell by Maria Ruis (Barron's Educational Series, Inc., 1985)

The Five Senses: Taste by Maria Ruis (Barron's Educational Series, Inc., 1985)

The Five Senses: Touch by Maria Ruis (Barron's Educational Series, Inc., 1985)

You Can't Taste a Pickle With Your Ear by Harriet Ziefert and illustrated by Amanda Haley (Blue Apple, 2002)

Web Resources:

The Five Senses

<http://idahoptv.org/dialogue4kids/season10/senses/facts.cfm>

The Senses

<https://jr.brainpop.com/health/bodies/senses/preview.weml>

Leaving Bio: An In-depth Look At the Senses

http://leavingbio.net/the%20senses_files/the%20senses.htm

Exploring the Five Senses

<http://www.schenectady.k12.ny.us/users/title3/future%20grant%20projects/projects/fivesenses/index2.htm>

Anatomy and Structure of Human Sense Organs

<http://www.scientificpsychic.com/workbook/chapter2.htm>

Activities

Magic Milk

Objectives

- Students will use their sense of sight to observe coloring mixing and a chemical reaction.
- Students will have an understanding of the mixing of primary colors.

Materials

- Dawn Soap (Dish Soap)
- Food Coloring (Primary Colors)
- Q-Tips
- Shallow dish
- Milk (higher fat content works better)

Activity Instructions

1. Pour milk in the dish just to cover the bottom
2. Drop 2 different primary colors into the milk dish.
3. Cover a Q-tip in Dawn Soap
4. Lightly touch the Q-tip to the colors and observe what happens.
5. Add another Q-tip with soap. Does anything else happen?

Extensions

If the focus is fully on primary colors, have multiple containers of milk containing only two primary colors. Multiple dishes can be used.

Discussion

Eyes observe reactions between two objects. In this experiment our eyes are observing the fat in the milk and the soap moving away from each other. Our eyes are also observing all of the different color changes, when two colors mix together. What colors did you start with? And now what colors do you see?

Teacher's Note

There are two different things your students are observing. One is color mixing; their eyes are seeing the different colors mix, producing new colors. The other is the chemical reaction occurring, involving the soap and the milk. The secret of the bursting colors is the chemistry of that tiny drop of soap. Dish soap, because of its bipolar characteristics (non-polar on one end and polar on the other), weakens the chemical bonds that hold the proteins and fats in the solution. The soap's polar or *hydrophilic* (water-loving), end dissolves in water, and its *hydrophobic* (water-fearing) end attaches to a fat globule in the milk. This is when the fun begins.

The molecules of fat bend, roll, twist, and contort in all directions as the soap molecules race around to join up with the fat molecules. During all of the fat molecule gymnastics, the food coloring molecules are bumped and shoved everywhere, providing an easy way to observe all the invisible activity. As the soap becomes evenly mixed with the milk, the action slows down and eventually stops.

Standards:

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub-Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Engage in simple investigations

Use simple tools to extend investigation

Make inferences, generalizations and explanations based on evidence

Share findings, ideas and explanations through a variety of methods

Strand: Physical Science

Topic: Explorations of Energy

Age: Pre-Kindergarten (3-5 years)

With modeling and support, explore the properties of objects and materials

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Musical Tubes

Objectives

- Students will explore different sounds using only their sense of hearing.
- Students will understand how the sense of sight aids in forming a full picture.

Materials

- Paper towel rolls
- Bells
- Pom-Poms or Cotton balls
- Beads
- Blocks
- Bowl
- Any object that differ in sounds
- Dark tape
- Dark paper

Activity Instructions

- 1 . Cut out two dark paper circles to fit the ends of the paper towel roll and tape one of the circles onto one end.
- 2 . Fill each paper towel roll with an object.
- 3 . Tape the other circle to the open end.
- 4 . Fill different bowls up with each item.
- 5 . Students shake the rolls to hypothesize what is in each of them.
- 6 . After students have figured it out the sounds, bring the different bowls out.
- 7 . Students match the object to the sound.

Extensions

To make this an independent activity; have items in a container for students to randomly retrieve and match, instead of placing objects in a bowl. Change the objects inside the tubes to make different sounds.

Discussion

What part of our body do we hear with? Can you guess what is inside the tube using only your sense of hearing? Shake the tubes. Is it a loud noise or a soft noise? Does it sound heavy or light?

After objects are brought out

Now match the objects to the tubes. Was it easier to figure out what objects were hiding in the tube? You were able to see, hear and touch the objects. Now your brain has fully formed the object.

Teacher's Note

Sound waves are vibrations of air. When objects collide they produce vibrations. Our outer ear has a special shape that funnels in the vibrations and help located the sound. Low sounds have larger vibrations, while high sounds have smaller vibrations.

Standards:

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub-Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Explore objects, materials and events in the environment

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Use simple tools to extend investigation

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Share findings, ideas and explanations through a variety of methods

Strand: Physical Science

Topic: Explorations of Energy

Age: Pre-Kindergarten (3-5 years)

With modeling and support, explore the properties of objects and materials

With modeling and support, explore the properties and characteristics of sound and light.

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Common Core Standards

Physical Science

Grade: Pre-Kindergarten

Content Statement: Objects and materials are described by their properties

Content Statement: Many objects can be made to produce sound

Texture Balloons

Objective

- Students will explore different textures using only their sense of touch
- Students will understand how the sense of sight aids in forming a full picture.

Materials

- Balloons (different colors)
- Funnel
- Flour
- Beans
- Rice
- Sand
- Bowl

Activity Instructions

1. Place the funnel in the balloon and fill each balloon with a different texture.
2. Tie end of the balloon.
3. Fill different bowls up with each item.
4. Students touch each balloon to guess the contents of each balloon.
5. Give students the items and have them match them to the balloons.

Extensions:

To make this an independent activity; have items in a container for students to randomly retrieve and match, instead of placing objects in a bowl. Change the items inside the balloons to experiment with different textures.

Discussion

What part of our body do we touch with? Can you guess what is in the balloons only using your sense of touch? Feel each balloon. Is it bumpy or smooth? Does it feel little or big?

After objects are brought out

Now match the item to the balloon. Was it easier to figure out what object was hiding in the balloon? You were able to see, and touch the objects. Now your brain has fully formed the object.

Teacher's Note

Touch receptors cover our entire body. Texture is one of the many ways one can categorize and identify an object. Our sense of touch is controlled by a huge network of nerve endings and touch receptors in the skin known as the *somatosensory system*. This system is responsible for all the sensations we feel - cold, hot, smooth, rough, pressure, tickle, itch, pain, vibrations, and more. Within the somatosensory system, there are four main types of receptors: mechanoreceptors, thermoreceptors, pain receptors, and proprioceptors.

Before we dig further into these specialized receptors, it is important to understand how they adapt to a change in stimulus (anything that touches the skin and causes sensations such as hot, cold, pressure, tickle, etc). A touch receptor is considered *rapidly adapting* if it responds to a change in stimulus very quickly. Basically this means that it can sense

right away when the skin is touching an object and when it stops touching that object. These receptors best sense vibrations occurring on or within the skin. A touch receptor is considered *slowly adapting* if it does not respond to a change in stimulus very quickly. These receptors are very good at sensing the continuous pressure of an object touching or indenting the skin but are not very good at sensing when the stimulus started or ended.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Explore objects, materials and events in the environment

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Strand: Physical Science

Topic: Explorations of Energy

Age: Pre-Kindergarten (3-5 years)

With modeling and support, explore the properties of objects and materials

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Common Core Standards

Physical Science

Grade: Pre-Kindergarten

Content Statement: Objects and materials are described by their properties

Mystery Smells

Objective

- Students will explore different smells using only their sense of smell.
- Students will understand how the sense of sight aids in forming a full picture.

Materials

- Small paper cups
- Rubber bands
- Cotton balls
- Wax paper
- Scented oils (with corresponding items)(these can be found either in the baking section of your local grocery store, or the candle section of your retail store)
 1. Orange scent (an Orange)
 2. Rose scent (a rose)
 3. Lemon scent (a lemon)
- Bowls

Procedure

1. Soak a cotton ball in the one of the scents. Place cotton ball in a cup.
2. Cut out wax paper to fit the opening of the cup and secure it with a rubber band. Punch a small hole in the top with a pencil.
3. Place objects the scents belong to into different bowls
4. Students will smell each cup to figure out what it is.
5. Show students the items, they will match the item to the smell.

Please ask about allergies prior to putting the different smells out for children.

Extension

To make this an independent activity; have items in a container for students to randomly retrieve and match, instead of placing objects in a bowl. Change the scents on the cotton balls to experiment with different scents.

Discussion

What part of our body do we smell with? Can you guess what the scent is by using only your sense of smell? Smell the cup. Does it smell sweet or sour? Does it smell yummy or gross? What does the smell make you think of?

After the smells have been recognized

Now match the items to the cup. Was it easier to figure out what scent was in the cup? You were able to see, and smell the objects. Now your brain has fully formed the object.

Teacher's Note

Your nose detects the odor molecules that float in the air. Smelling is a very important sense, the flavor of food actually depends more on smell than taste. The average person can recognize 4,000 different smells.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Explore objects, materials and events in the environment

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Strand: Physical Science

Topic: Explorations of Energy

Age: Pre-Kindergarten (3-5 years)

With modeling and support, explore the properties of objects and materials

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Common Core Standards

Physical Science

Grade: Pre-Kindergarten

Content Statement: Objects and materials are described by their properties

Mystery Taste

Objective

- Students will explore different items using only their sense of taste.
- Students will understand how the sense of sight aids in forming a full picture.

Materials

- Paper plates
- Spoons
- Salt, Sugar, Unsweetened Cocoa, Powdered Lemon
- Pretzel, Cookie, Cocoa, a Lemon (Objects to match)
- Bowls
- Small containers

Activity Instructions

1. Pour Salt, Sugar, Unsweetened Cocoa and Powdered Lemon into different containers.
2. Put items representing each taste into different bowls.
3. Place a pinch of flavor onto student's paper plate.
4. Have students taste each one and figure out what it is.

Please ask about allergies before you put the different tastes out for children to test.

Extension

Put similar tastes out (like fruits or fruit flavorings) and have them tell the difference. Put flavors into salt shakers. Instead of placing objects in a bowl for students to match, have items in a container for students to randomly retrieve.

Discussion

What part of our body do we taste with? Can you guess what the powder is by only its taste? Taste the sample I put in front of you. It is sweet or sour? Does it taste like something you have eaten before? Does this taste similar to anything else you've eaten today?

After all tastes have been identified

Now match the items to the sample. Was it easier to figure out what it was? You were able to see, and smell and taste the items. Now your brain has fully formed the object.

Teacher's Note

Your tongue detects simple chemicals inside your mouth, which translates into taste. Despite popular beliefs, there are not specialized taste buds in certain places on our tongue that detects certain tastes; instead, the whole tongue identifies bitter, sour, salty, sweet, and umami (savory).

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Explore objects, materials and events in the environment

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Strand: Physical Science

Topic: Explorations of Energy

Age: Pre-Kindergarten (3-5 years)

With modeling and support, explore the properties of objects and materials

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Common Core Standards

Physical Science

Grade: Pre-Kindergarten

Content Statement: Objects and materials are described by their properties

Lesson 2- The Eye and How We See



Mandy magnifies her view of the world.

Summary

Your eyes are very special and complex. Since they are so special, our bodies have built in protection to keep the safe from outside elements. Eyelashes and eyelids protect our eyes from dirt and insects. Inside our eyes we have muscles that widen and narrow to control the amount of light that goes into our eyes. Our iris and pupil work as a team to adjust the amount of light that goes into our eyes. The following activities will have your students identifying the iris and the pupil, and determining what changes the size of the pupil.

Vocabulary:

- Bar Graph
- Dark
- Eyelid
- Eyebrow
- Eyelashes
- Iris
- Light
- Pie Graph
- Pupil
- Tear
- White Light

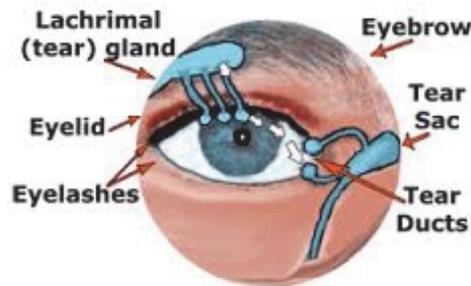
Objectives:

- Students will identify and locate the iris and the pupil.
- Students will describe the function of the iris and the pupil.
- Students will be able to recognize the differences in other's eyes.

Teacher's Information

The Eye

The eye is a complete optical system that is slightly smaller than a ping-pong ball. The eye transforms light into the images that we see. Our eyes work as “live cameras” for the brain, gathering up and processing images far better than any high-tech device.



Natural Protection

The parts of our eye that we are most familiar with include the eyelid, eyebrow, and eyelashes. All of these parts of the eye help protect the eye.

- *Eyebrow*: Shade our eyes. They also help to keep the sweat and debris from falling into our eyes.
- *Eyelashes*: Tiny row of hairs along the top and lower eyelids. Each eye has approximately 100-150 eyelashes on the upper eyelid and 50-70 on lower lid. Eyelashes help keep dust, dirt, sweat, water, and other irritants from getting into our eyes.
- *Eyelids*: Move up and down over our eyes like a window shade. They sweep dirt away when you blink and help spread tears. They help protect our eyes by automatically closing when an object gets too close to our eyes. Eyelids keep the light out when we sleep.

- *Tears*: Lubricates our eyes when we blink. They contain bacteria-killing enzymes that protect our eyes from infection. We blink every 2 to 10 seconds. During a blink we keep our eyes shut for approximately .3 sec, a total of 30 minutes a day.

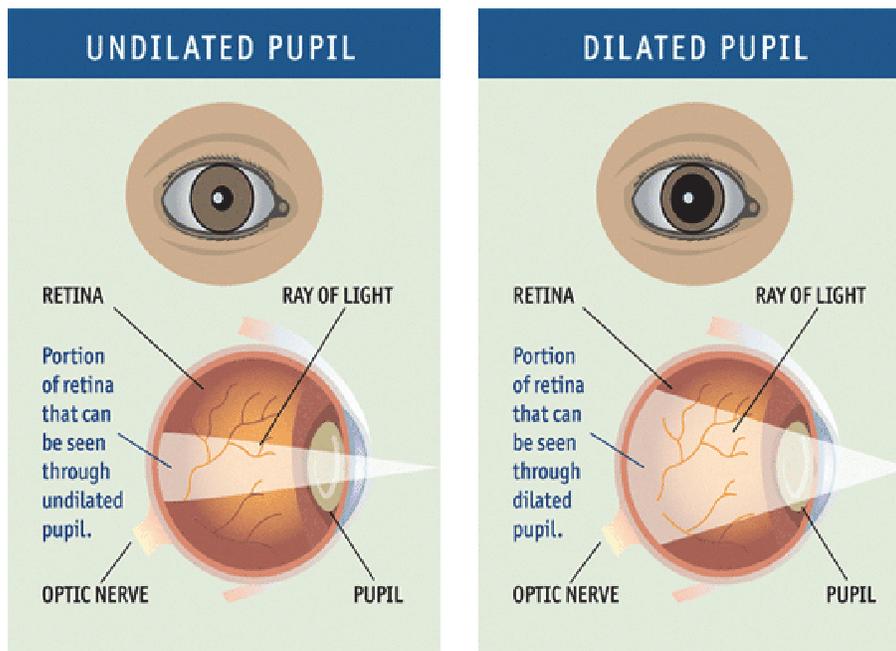
Pupil and the Iris

The Pupil

The pupil is the hole in the middle of your eye that looks like a black spot. It can change sizes depending on how much light is needed to see. When in a dark place with limited light, your pupil gets larger (dilates) to let more light into your eyes. When in a bright place where light is abundant, your pupil gets smaller (undilates) to let only the right amount of light enter.

The Iris

The iris is the colored part of the eye that surrounds the pupil. The iris is where eye color is determined. The color of the connective tissue and pigment cells determine eye color. More pigment results in brown eyes, whereas, less pigment results in blue eyes. The iris also controls the amount of light that enters the eye. More light is allowed to enter when conditions are dim and less light in bright environments. However, too much light can damage the eyes. The muscles of the iris widen or narrow to change the pupil size regulating the amount of light that can enter the eyes. The dilator muscle makes the iris smaller, the pupil becomes larger, and more light can enter the eyes. The sphincter muscles make the iris larger, the pupil smaller, and less light can enter the eye.



Light

Light is the only thing we can really see. It comes to us in the form of a combination of magnetic and electrical energy traveling at very high speeds. Light is composed of small particles of energy called photons. Light travels in waves that progress as straight lines. The light waves bounce or bend as they travel. Different wavelengths produce different colors.

Visual light is a combination of seven wavelengths. We cannot see these wavelengths separately, but instead see a combination of the seven that represent white light. The more sensitive the eye is to varying sizes of wavelength, the more colors can be seen. Visible light that can be seen by the human eye ranges between ultraviolet and infrared. They include (from longest to shortest) red, orange, yellow, green, blue, indigo, violet (ROYGBIV). It is estimated that the human eye can see as many as 150 different hues or shades of color. The color seen depends on the wavelengths the eye can absorb and how you perceive it.

Reading List

The Eye Book Theo LeSieg

Eyes (Spot the Difference) Daniel Nunn

Eye: How It Works David Macaulay

The Five Senses: Sight by Maria Rius (Barron's Educational Series, Inc., 1985)

Web Resources

American Ophthalmology Association Site- Teacher Site

<http://www.aoa.org/patients-and-public/resources-for-teachers?sso=y>

Learn About the Human Eye

<http://sciencewithme.com/learn-about-the-human-eye/>

Glossary of Terms- Terminology of the parts and stuff that make up the eye

http://www.tedmontgomery.com/the_eye/glossary/A.html

Activities

My Eye

Objectives

- Students will be able to identify their eye color.
- Students will be able to draw what they see on paper.

Materials

- Crayons (art materials)
- Paper
- Mirror (included)

Activity Instructions

1. Students will observe their eyes in a handheld mirror. They will notice the shape of their eye, and the color of their iris. They will also locate the pupil (black circle) in their eye.
2. Students will draw what shape they think their eye is, and color what they saw.
3. Students will analyze their data and share with a friend.

Extension

Ask students to complete this task at home with other members of their families. Do all siblings have the same eye color?

Additionally, they can compare their eye structure with an animal's. How are they the same? How are they different?

Discussion

How many eyes do we have? Are there different colors in our eyes? Today we are going to look at our eyes in a mirror and look for the colored part of our eye called the iris. We are also going to look for the black circle in our eye called the pupil.

After everyone has finished with the mirror activity

Now draw a picture of your eye. You can look back into the mirrors if you want. What shape is your eye? What color is your iris? What color is the little circle in your eye?

If you can, write the word “eye” at the bottom of the page.

Teacher’s Note

The eye is a complete optical system slightly smaller than a ping-pong ball. The eye transforms light into the images that we see. Our eyes work as “live cameras” for the brain, gathering up and processing images far better than any high-tech device. Our eyes are about an inch in diameter and weigh just a quarter of an ounce.

Standards:

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Domain: Language and Literacy

Strand: Writing

Topic: Early Writing

Age: Pre- Kindergarten (3-5 years)

Use a 3-finger grasp of dominant hand to hold a writing tool

Eye Puzzle Anatomy

Objectives

- Students will complete a puzzle to learn about the eye
- Students will be able to identify and locate the pupil and the iris.

Materials

- Foam Eye Puzzle (included)
- Iris Label (located in appendix)
- Pupil Label (located in appendix)

Activity Instructions

1. Have students put together the eye puzzle
2. Label the iris (brown) and the pupil (black). (Included in appendix)

Extension

Have the students create their own label for the iris and pupil.

Discussion

This is a puzzle of an eye. Put together the pieces to complete the puzzle.

When puzzle is complete

Label the iris and the pupil. The iris is the colored part of your eye and the pupil is the black dot in the middle.

Teacher's Note

The pupil is a black hole in your eyes that allows light to come through. The iris is the colored part of your eye. The muscles of the iris widen or narrow to change the size of the pupil. The size of the pupil determines the amount of the light that filters through the eyes. More information on the pupil and iris is located in Lesson 2- Teacher's Information.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Changes of the Pupil

Objectives

- Students will understand the function of the pupil and the iris
- Students will understand the differences that light and dark have on our eyes.

Materials

- Construction Paper
 - White
 - Purple
 - Black
 - Brown
 - Blue
 - Green
- Glue
- Scissors
- Mirror (included)
- Pupil, Iris and Eye Outline (Located in appendix)

Activity Instructions

Preparation depends on students' development

Follow instructions for each light change

First- Normal light

1. Paste white eye outline to purple construction paper
2. Have student determine what color iris they have. Pick out that color iris.
3. Glue iris in the middle of eye outline
4. Students arrange the dots from smallest to biggest.
5. Have student choose the medium size pupil.
6. Glue the pupil in the middle of the iris.
7. Have student trace the words at the bottom of the paper.

Second- Bright Light

1. Trace eye outline on white construction paper
2. Have student determine what color iris they have. Pick out that color iris.
3. Glue iris in the middle of eye outline
4. Have student choose the smallest pupil.
5. Glue the pupil in the middle of the iris.

Third- Darkness

1. Paste the white eye outline to black construction paper
2. Have student determine what color iris they have. Pick out that color iris.
3. Glue iris in the middle of eye outline
4. Have student choose the largest pupil.
5. Glue the pupil in the middle of the iris.

Extension

Have students the complete eye pictures in order of biggest to smallest

Discussion

Our eyes need light to see. The black circle in our eyes, the pupil, lets light into our eyes. When do you think our eyes need more light, in the dark or out in the light? Our pupil gets bigger and smaller depending on how much light our surroundings have. When we are outside with the sun shining, is there a lot of light or is it dark? Our eyes do not need a lot of light, so our pupil is small. When we are in the classroom, is there a lot of light? Is it dark? So our pupil is medium size. Now when we are ready for bed, is it dark or light? Our eyes need a lot of light to see, so our pupil can be very big. Today we are going to make three different eyes, one in the sun, one in the classroom and one at night time. Do you think the pupils will be different sizes? To make the eyes yours, take a look at your eyes in the mirror. What color is your iris? That is the color that you are going to pick for your iris. Did you know our eyes can get too much light? What do you think would happen to our eyes if we got too much light?

Teacher's Note

The pupil is the hole in the middle of your eye that looks like a black spot. It can change sizes depending on how much light it needs to see. It gets larger when you are in a dark place to let more light enter and it gets smaller when you are in a sunny place to let only the right amount of light enter. The iris is the colored part of the eye that surrounds the pupil. The iris is where eye color is determined. The color of the connective tissue and pigment cells determine eye color. More pigment in our eyes will result in brown eyes, whereas, less pigment results in blue eyes. The iris also controls the amount of light that enters the eye. More light is allowed to enter when conditions are dim and less light in bright environments. However, too much light can damage the eyes. The muscles of the iris widen or narrow to change the pupil size regulating the amount of light that can enter the eyes. The dilator muscle makes the iris smaller, the pupil becomes larger, and more light can enter the eyes. The sphincter muscles make the iris larger, the pupil smaller, and less light can enter the eye.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Strand: Measurement and Data

Topic: Describe and Compare Measureable Attributes

Age: Pre- Kindergarten (3-5 years)

Describe and compare objects using measureable attributes

Order objects by measureable attribute.

Sub- Domain: Science

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Light vs. Dark Game

Objectives

- Students will sort objects into categories of light and dark
- Students will understand the functions of the pupil and iris.

Materials

Scissors

Glue

Day and Night Worksheet (Located in appendix)

Procedure

1. Cut out all of the items
2. Trace the words Light and Dark
3. Find the two pictures of eyes and place the big pupil underneath dark and the little pupil underneath light.
4. Sort the pictures from light and dark and then glue them in the correct column.

Extension

Have students stand in the bathroom and watch their own pupils constrict and relax in the mirror while turning the lights on and off!

Discussion

Your pupil changes size depending on how much light there is. Is there a lot of light available at nighttime? Your pupil is big to let a lot of light in. Is there a lot of light during the day? Then your pupil is small to let a small amount of light in. Cut out the squares and organize them by light (during the day) and dark (during the night). Then figure out which is the biggest pupil, place that with the night. Then figure out which is the smallest pupil and place with the day. Glue the eyes under light or dark and the squares underneath.

Teacher's Note

The pupil is the hole in the middle of your eye that looks like a black spot. The pupil can change sizes depending on how much light it needs to see. Your pupil gets larger when you are in a dark place to let more light in. It gets smaller when you are in a sunny place. The iris and pupil work together to only let the right amount of light in.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Strand: Measurement and Data

Topic: Describe and Compare Measureable Attributes

Age: Pre- Kindergarten (3-5 years)

Describe and compare objects using measureable attributes

Order objects by measureable attribute.

Sub- Domain: Science

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Light Toss

Objectives

- Students will understand the concept of big and small.
- The sizes of the pupil determine how much light it allows in.

Materials

- 2 gallon bucket
- Empty Coffee canister
- Ping pong balls
- Small pail for balls
- Black construction paper (cut into a circle outline) to place over the rim of the bucket and coffee canister
- Tape

Procedure

1. Place tape on the floor, (placement where child stands, placement for coffee canister and bucket).
2. Place coffee canister and 2 gallon bucket on taped line
3. Place ping-pong balls in small pail
4. Students will throw ping pong balls into coffee canister, then into the bucket. They will determine which container was easier to throw the balls into and which one held more.

Extension

Have enough Ping- Pong ball for students to fill up entire bucket and coffee canister. Students will then practice counting to determine which container held more. More or less activities can be covered following this.

Discussion

When we are in bright light are our pupils big or small? Does that allow a lot of light to come through? When we are in a dark room, are our pupils big or small? Does that allow a lot of light to come through? We are going to determine the characteristics of big and small. Stand behind the line, and then toss the ping pong balls into the different targets.

After children complete activity

Which one is bigger, the bucket or the coffee canister? Which one was easier to throw the ping pong balls into? (The bucket) When our eyes need more light we need a bigger hole. That is why our pupil gets large, more light can get in.

What about the coffee canister? It was harder to throw the balls in. When there is too much light we need a smaller hole to limit the amount of light coming through. That is why our pupil gets smaller less light can get in.

Teacher's Note

The pupil is the hole in the middle of your eye that looks like a black spot. It can change sizes depending on how much light it needs to see. It gets larger when you are in a dark place to let more light enter and it gets smaller when you are in a sunny place to let only the right amount of light enter.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Strand: Measurement and Data

Topic: Describe and Compare Measureable Attributes

Age: Pre- Kindergarten (3-5 years)

Describe and compare objects using measureable attributes

Order objects by measureable attribute.

Measure length and volume using non-standard or standard measuring tools

Sub- Domain: Science

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Large Muscle, Balance and Coordination

Age: Pre- Kindergarten (3-5 years)

Demonstrate coordination in using objects during active play

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

The Eyes of the Classroom

Objectives

- Students will experience that people are different.
- Students will understand a simple bar graph.

Materials

- Construction paper
 - Green
 - Blue
 - Brown
 - Large sheet of butcher paper
- Crayons
 - Green
 - Blue
 - Brown
- Blank eye picture (Located in appendix)
- Mirror (included)
- Glue
- Tape

Activity Instructions

1. Place the large piece of butcher paper on a wall and divide it into columns for brown, blue, and green. If desired, you can add hazel, but this may be confusing for some students.
2. Cut the green, blue and brown construction paper into squares (or irises if you are feeling adventurous)
3. Students determine their eye (iris) color, by looking into the mirror.
4. Students color eye picture the color of their eye, and write name under their eye.
5. Students will choose the square the same color as their eyes.
6. After all the eyes have been colored, have students help put the bar graph together.

Extension

Create other graphs with this information. Have students stand in groups of their eye color, for more visual display.

Discussion

What is the colored part of our eyes called? Irises come in three main colors; blue, brown and green. Today we are going to determine what are eye color is and graph how many of you have that color iris. Graphing means taking a lot of different numbers and seeing which group has more and which has less. Today we are going to make a bar graph.

First look at your eyes in the mirror and figure out what color your iris is. Color the picture of the eye that same color. Write your name, at the bottom of your eye. Choose a square the same color as your eyes and glue it where it belongs on our bar graph. Now we are going to look at our bar graph and determine which color irises we have more of in the class. What color do we have the most of? What color do we have the least of?

Teacher's Note

The iris is the colored part of the eye that surrounds the pupil. The iris is where eye color is determined. The color of the connective tissue and pigment (melanin) cells determine eye color. More melanin results in brown eyes, whereas, less pigment results in blue eyes. Brown iris are the most common color. Truly green eyes are the least common, with less than 2% of the world's population possessing them. Some children may ask about hazel eyes as well. For the purpose of this activity, you can call it brown so as not to make things too complex. However, hazel eyes are a combination of brown and green.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Strand: Measurement and Data

Topic: Describe and Compare Measureable Attributes

Age: Pre- Kindergarten (3-5 years)

Describe and compare objects using measureable attributes

Topic: Data Analysis

Age: Pre- Kindergarten (3-5 years)

Collect data by categories to answer simple questions

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Engage in simple investigations

Record observations using words, picture, charts, graphs, etc

Make predictions

Share findings, ideas, and explanations through a variety of methods

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Domain: Social and Emotional Development

Stand: Self

Topic: Self Concept

Age: Pre- Kindergarten (3-5 years)

Identify the diversity in human characteristics and how people are similar and different

Compare own characteristics to those of others

The Eyes of our Families

Objective

- Students will understand that people are different.
- Students will understand a simple bar graph.
- Students ask questions to collect data

Materials

- Stickers (or anything else that go in bar graph)
 - Green
 - Brown
 - Blue
- Large paper
- Family Eye Worksheet (Located in Templates page)

Activity Instructions

1. Draw the outline of the bar graph.
2. Students will go home with a worksheet. And bring it back filled out.
3. Students will look at other people in their family and determine what color irises they have and color the block the color of their eyes.
4. Have students count the number of green, blue and brown blocks they have on their worksheet and collect that many stickers.
5. When each student is ready have them come up to the bar graph and place their sticker in their correct column.

Extension

Use the same information to create a pie graph. This can also be broken down into multiple categories: What color eyes do the most moms have? Which color eyes do the least amount of brothers have?

Discussion

Everyone is different from the hairs on our heads to the toe nail on our toes. Our eyes are different, not just from our classmates, but from our family as well. Today you are going to take a worksheet home and fill it out. Look into your mom's, dad's and brother's and sister's eyes, figure out their eye color. Ask them what color their iris is? Then ask them to help you color in the space on the worksheet.

After all worksheets are returned

Now count how many blue, green and brown blocks you have. Go up and collect that same number of colors. Then go to the bar graph and place the green dots in the green column, the blue dots in the blue column, and the brown dots in the brown column.

After Graph is completed

Which color has the most dots? That means as a class we know more people with _____ eyes than we do people with _____.

Teacher's Note

The iris is the colored part of the eye that surrounds the pupil. The iris is where eye color is determined. The color of the connective tissue and pigment (melanin) cells determine

eye color. More melanin results in brown eyes, whereas, less pigment results in blue eyes. Students may ask about eyes that change color. The only way eyes can change color is with colored contacts. When people say their eyes change color depending on what they are wearing, that is just an effect of the light. Their eyes always stay the same color.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Strand: Measurement and Data

Topic: Describe and Compare Measureable Attributes

Age: Pre- Kindergarten (3-5 years)

Describe and compare objects using measureable attributes

Topic: Data Analysis

Age: Pre- Kindergarten (3-5 years)

Collect data by categories to answer simple questions

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Engage in simple investigations

Record observations using words, picture, charts, graphs, etc

Make predictions

Share findings, ideas, and explanations through a variety of methods

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre-Kindergarten (3-5 years)

With modeling and support, demonstrate knowledge of body parts and bodily processes in human and other animals.

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform tasks requiring precise movements.

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Domain: Social and Emotional Development

Stand: Self

Topic: Self Concept

Age: Pre- Kindergarten (3-5 years)

Identify the diversity in human characteristics and how people are similar and different

Compare own characteristics to those of others

Lesson 3: Taking Care of Our Eyes



Jeff and Arthur pose for the camera with their glasses.

Summary:

What we put into our body impacts the health and safety of our eyes. Eating healthy food like fruits and vegetables increases our eye health and makes them stronger. The frequency and severity of at least 90% of all eye injuries to children can be reduced by understanding the dangers, identifying and correcting hazards, and using greater care when supervising children. Outside protection is needed to protect our eyes from the outside environment as well. Sunglasses and safety glasses provide eye protection for unexpected dangers and the sun.

Vocabulary

- Fruits
- Eye Protection
- Healthy
- Nutrients
- Unhealthy
- Unsafe
- Ultraviolet (UV) radiation
- Safety
- Vegetables
- Vitamins

Objectives

- Students will be able to identify the difference between healthy food and unhealthy food.
- Students will be able to explain the effects of eating healthy food.
- Students will be able to identify eye protection.

Teacher's Information

Healthy Food and Vegetables

Healthy nutrition is a means of protecting yourself from eye diseases. What you eat can help protect you from having problems with your eyes later in life. Eating key vitamins such as; Vitamin A (Beta Carotene), Vitamin C (ascorbic acid), Vitamin E, Folic Acid, Selenium, and Zinc are beneficial to eye health. These vitamins can be found in leafy green vegetables, carrots, citrus fruits and melons.

Colors of Fruits and Vegetables

Fruits and vegetables are not only different from their tastes and appearance but by the nutrition they provide your body. Each color provides different nutrients that are important for your body. Nutritionists say that eating two foods in each color every day is very healthy for your body. A colorful plate is a happy plate.

Red: Lycopene and Anthocyanins

- Lowers blood pressure
- LDL cholesterol levels
- Maintain memory function
- Fights off infections and supports joint tissues
 - Tomato
 - Strawberry
 - Raspberry
 - Red peppers
 - Cranberries

Purples and Blues: Resueratrol, proanthocyanidin, anthocyanidin

- Promote healthy aging
- Improve immune
- Improve digestive systems

- Maintain memory function
- Lower cholesterol
 - Blackberries
 - Blueberries
 - Eggplant
 - Plums
 - Prunes

Greens: Chlorophyll

- Lower risk of cancer
- Lower blood pressure
- Improve Vision
- Improve immune System
 - Spinach
 - Kiwi
 - Avocado
 - Broccoli
 - Cucumber

Whites and Tans: Anthoxanthins, Alilicin

- Lower blood pressure
- Lower cholesterol
 - Mushrooms
 - Lima Beans
 - Cauliflower
 - Banana
 - Onions

Yellows: Lutein and zeaxantin

- Decrease risk of macular degeneration
- Protect eyes
- Increase energy levels and immune system
 - Lemon
 - Yellow Squash
 - Pineapple
 - Yellow apples
 - Pears

Orange: Carotenoids and Citrus bio-flavornoids

- Decrease risk of macular degeneration
- Improve brain function
- Decrease muscle cramps
- Increase efficiency of immune system
 - Carrots
 - Oranges
 - Mangos
 - Pumpkin
 - Sweet potatoes

Eye Protection

The Weather

The weather can hurt our eyes. Sun, sand, water, snow, and wind can be painful to your eyes if you do not protect them. The sun emits many types of rays, including visible light, which lets you see; infrared radiation, which is invisible, but felt as heat; ultraviolet (UV) radiation, which also is invisible, is often called the “sunburn” ray. The weather can fool you as UV radiation is just as bad on cloudy days as it is on sunny days.

Exposure to UV rays can damage and contribute to vision loss from eye diseases such as macular degeneration and/or cataracts.

Corneal sunburn can result from bright sunlight reflected off of beaches and ski slopes. Long-term exposure can lead to cataracts, skin cancer around the eyelids and macular degeneration. Adults and children are both at risk for eye damage caused by UV radiation.

How to protect your eyes from the sun:

Sunglasses with 99-100% UV protection shades the eyes from bright sun, but can cause the pupils to dilate, allowing in more harmful rays. You should not wear sunglasses if they are scratched or have bubbles/distortions because damage to your eyes can occur. Lenses also should be large enough to shield eyes from most angles and to block light that enters in around the frames. The sunglasses should fit snugly against the bridge of your nose.

For maximum protection add a wide-brimmed hat; hats can protect you from as much as 50% of UV radiation. Hats also reduce the sunlight that can enter your eyes from the sides or top of sunglasses.

Eye Impact Hazards

All eye wear should protect eyes from impact hazards. When safety is an issue, lenses should be made from polycarbonate materials, which provide the highest level of impact protection. The frequency and severity of a least 90 percent of all eye injuries to children can be reduced by understanding dangers, identifying and correcting hazards, and using greater when supervising children.

Eye Injuries

The Most common causes of eye injuries to children include:

- Not using eye protection while playing sports.
- Misuse of toys or altering toys.
- Falls involving home furnishings and fixtures such as beds, stairs, tables, and toys.
- Misuse of everyday objects like home repair and yard care products, personal-use items, kitchen utensils, silverware, pens and pencils.
- Accidental exposure to harmful household and cleaning products such as detergents, paints, pesticides, glue, and adhesives.
- Automobile accidents.
- Fireworks.

Eye Injuries at Home

A large number of eye injuries happen at home. A significant number of the injuries to children age 14 and younger are related to toys and play activities. Of those eye injuries, 90% are preventable.

Eye Injuries Outside of the Home

Classroom projects, physical education classes, industrial arts, vocational arts, and sports present risks for impact or penetration eye injuries. Most blunt impact injuries are mild, yet can force the eye back into its socket, damage surface structures and structures in the back of the eye, lead to retinal detachment, cataracts, black eyes (blood leaking into the skin, and vessels on surface of the eye to break), and orbital bone fractures.

Symptoms of Eye Injury

Any of the following symptoms may indicate a serious eye injury. If any of the following injuries occur, you should get immediate medical attention:

- Obvious pain or vision problems
- Cut or torn eyelid
- One eye that does not move as completely as the other
- One eye that sticks out in comparison to the other
- Abnormal pupil size or shape
- Blood in the clear portion
- Something in the eye or under the eyelid that cannot be easily removed

Eye Injury Occurrence

If an eye injury occurs, start with the procedure below; Be sure to seek immediate medical attention.

- Do not rub the eye
- Protect the eye from the pressure of rubbing by taping a foam cup or similar shielding object against the bones surrounding the eye.
- Do not apply ointment or medication to the eye.
- For punctures or cuts, bandage the eye preventing any pressure on the eye.
- Do not attempt to wash the eye or remove any object stuck in the eye.
- Immediately flush the eye with clean water for up to 15 minutes if a chemical burn occurs. Take the chemical and/or information on the chemical to the medical facility.
- Gentle application of a small cold compresses will reduce swelling and pain from a blow to the eye until a medical professional is seen.
- Eyewash can be used to flush sand or small debris from eye.
- Avoid the use of aspirin, ibuprofen, or other non-steroidal, anti-inflammatory drugs. These medications thin blood and increases bleeding.

Reading List

Bug, In the Eyes! By Tony Jaksa Jr.

Eyefoods for Kids: A Tasty Guide to Nutrition and Eye Health by Dr. Laurie Capogna and Dr. Barbara Pelletier

Arthur's Eyes by Marc Brown

Eyes and Ears by Seymour Simon

Web Resources

Children's Eye Injuries: Prevention and Care

<http://www.geteyesmart.org/eyesmart/living/eye-injuries/preventing-eye-injuries-in-children.cfm>

http://www.tedmontgomery.com/the_eye/glossary/A.html

<http://www.allaboutvision.com/nutrition/>

Eye Ware that Protects Your Child's Eyes

<http://www.allaboutvision.com/parents/protective.htm>

American Optometric Association

<http://www.aoa.org/patients-and-public/caring-for-your-vision/diet-and-nutrition?sso=y>

See All You Can See

<http://isee.nei.nih.gov/safety/>

Activities

Healthy Food Sort

Objectives

- Students will understand that what we put in our body affects it.
- Students will understand what food is healthy and unhealthy

Materials

- Food sort cards (Located in appendix)
- Scissors
- Glue or tape

Activity Instructions

1. Review each card with students, identify whether it is healthy or unhealthy.
2. Have students sort healthy vs. unhealthy food

Extension

Print a copy for each child. Have them cut out the pictures and sort them into healthy and unhealthy. Then the glue them on a piece of paper in groups of healthy or unhealthy

Discussion

Eating healthy is very important for keeping our eyes healthy. What kind of food is healthy? In this activity we are going to sort food that is good for our eyes (healthy), from food that is not good for our eyes (unhealthy).

Teacher's Note

Healthy nutrition is a means of protecting yourself from eye diseases. What you eat can help protect you from having problems with your eyes later in life. Eating key vitamins such as; Vitamin A (Beta Carotene), Vitamin C (ascorbic acid), Vitamin E, Folic Acid, Selenium, and Zinc are beneficial to eye health. These vitamins can be found in leafy green vegetables, carrots, citrus fruits and melons.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Mathematics

Stand: Algebra

Topic: Group and Categorize

Age: Preschool (3-5)

Sort and classify objects by one or more attributes

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Describe, compare, sort, classify

Domain: Physical Well-Being and Motor Development

Strand: Physical Well- Being

Topic: Nutrition

Age: Pre-Kindergarten (3-5 years)

Demonstrate basic understanding that eating a variety of foods helps the body grow and be healthy

Distinguish nutritious from non-nutritious foods

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

Standard 5: Students will demonstrate the ability to use decision- making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a health- related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Carrot Garden

Objectives

- Students will understand the life cycle of a plant
- Students will be able to list the resources needed to keep a plant alive.
- Students will be able to explain where their food comes from

Materials

- 2L empty plastic soda bottle
- Utility knife
- Potting soil
- Carrot seeds
- Plant nutrient (optional)

Activity Instructions

1. Rinse and clean your plastic soda bottle.
2. Cut off the top part of the bottom and then to create slits in the bottom with the utility knife
3. Fill up the bottle with at least 7 inches of potting soil
4. Plant seeds in a circular pattern.

About the planter

On average you can plant about 10 seeds in your new planter. After you water it for the first time, make sure it is completely soaked. **It will take between 14 to 21 days before your seeds begin to sprout.** Keep the soil moist and make sure the planter is not getting too much direct sunlight.

Extension

Plant different types of vegetables and fruits in your classroom. Plan to make a healthy snack with all the vegetables and fruit that you have grown.

Teacher's Note

Carrots are rich in beta-carotene, a carotenoid pigment found in many orange fruits and vegetables (it's also found in leaves, you can see evidence of this in the fall!). Beta-carotene is an important precursor for vitamin A. An extreme lack of vitamin A can cause blindness. In fact, in the developing world, vitamin A deficiency is the leading cause of blindness.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Strand: Economics

Topic: Production and Consumption

Age: Pre- Kindergarten (3-5 years)

With modeling and support, demonstrate understanding of where good and services originate and how they are acquired.

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)
Explore objects, materials and events in the environment
Make careful observations
Pose questions about the physical and natural environment
Engage in simple investigations.

Strand: Earth and Space Science

Topic: Explorations of the Natural World

Age: Pre- Kindergarten (3-5 years)

With modeling and support, develop understanding of the relationship between humans and nature; recognizing the difference between helpful and harmful actions toward the environment.

Strand: Life Science

Topic: Explorations of Living Things

Age: Pre- Kindergarten (3-5 years)

With modeling and support identify physical characteristics and simple behaviors of living things.

With modeling and support demonstrate an understanding that living things change over time.

With modeling and support, recognize similarities and differences between people and other living things.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well- Being

Topic: Nutrition

Age: Pre-Kindergarten (3-5 years)

Demonstrate basic understanding that eating a variety of foods helps the body grow and be healthy

Distinguish nutritious from non-nutritious foods

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

Standard 5: Students will demonstrate the ability to use decision- making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a health- related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Eat the Rainbow

Objective

- Students will understand that different colored fruits and vegetables are good for different parts of your body.
- Students will understand that fruits and vegetables are different from one another.

Materials

- Fruits and vegetables from multiple color categories
- Plates
- Forks
- Knives

Discussion

Today we are going to eat a rainbow. There are many different fruits and vegetables. They differ by shape, color, and taste, but what is really important is how they are different for your body. Your body needs nutrients, and the nutrients hiding inside the fruits and vegetables depends a lot on the color. Today we are going to eat a fruit and a vegetable from lots of different colors of the rainbow. Are all these foods healthy? Which ones do you like? Which ones do you find harder to swallow?

Extension

Read nutrition labels from healthy and unhealthy foods and identify which ones have the most nutrients. If desired, cut out these labels and sort them into healthy and unhealthy foods. Challenge students to eat one item of each color of the rainbow (ROYGBIV) in one day!

Teacher's Note

Fruits and vegetables are not only different due to their tastes and appearance but by the nutrition they provide your body. Each color provides different nutrients that are important for your body. Professionals say that eating two foods in each color every day is very healthy for your body. A colorful plate is a happy plate.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub-Domain: Mathematics

Stand: Algebra

Topic: Group and Categorize

Age: Preschool (3-5)

Sort and classify objects by one or more attributes

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Describe, compare, sort, classify

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Nutrition

Age: Pre-Kindergarten (3-5 years)

Demonstrate basic understanding that eating a variety of foods helps the body grow and be healthy

Distinguish nutritious from non-nutritious foods

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a healthy-related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Eye Protection

Objective

- Students will understand that in many activities our eyes need protection

Materials

- Different eye protection
 - Swimming goggles
 - Football helmet
 - Safety goggles (provided)
 - Safety glasses (provided)
 - Sunglasses
- Pictures of matching activities (Located in appendix)

Activity Instructions

1. Describe what each eye protection is used for
2. Describe what the pictures are showing
3. Students will match picture with the appropriate eye protection

Discussion

How many eyes do we have? Can we ever get new ones? We have to protect the ones that we have. To do that there is special eye protection for different activities that we do. Some people have to wear eye protection at work, because they are working with heavy objects or chemicals. Sometime we need protection to do fun things, like swimming or playing football. All of these eye protections have something in common: they cover your eyes and prevent objects from hitting them. I have a variety of eye protection that I want you to match to the corresponding activity. *Explain the pictures and protection.*

Extension

Include accessories that do not protect the eyes from blunt force injury (bandana, fashion hats, etc). Students have to sort them from safe and unsafe for your eyes. Have students discuss times they have experienced eye injuries before: perhaps a student has been hit in the eye with a ball on the playground, or has experienced dry, itchy eyes from not using goggles in a chlorinated swimming pool. What does eye injury feel like? How can they prevent this from happening in the future?

Teacher's Note

A lot of activities that children participate in require eye protection. A sport is an activity where objects can be thrown or kicked towards the face area. Safety glasses or goggles will help protect little eyes from getting harmed by flying objects. Hats with wide-brims protect our eyes from the sun, however does not protect our eyes from impact injuries.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Make inferences, generalizations and explanations based on evidence

Share findings, ideas and explanations through a variety of methods

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Safety Practices

With modeling and support, identify and follow basic safety rules.

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

1.2.4 List ways to prevent common childhood injuries

Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

4.2.3 Demonstrate ways to respond in an unwanted, threatening, or dangerous situation.

Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a healthy-related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Safety

Objectives

- Students will understand the importance of eye safety.
- Students will understand that being unsafe has consequences for their body.

Materials

- 2 Balloons
- Safety glasses (provided)
- A “splattering” material: we recommend flour, shaving cream, paint, or silly string

Activity Instructions

1. Blow up 2 balloons to about medium size. Draw a face on each balloon.
2. Place flour in a small cup
3. Students will sprinkle flour on top of the balloon with safety glasses
4. The second balloon should not have any protective gear. Observe the difference.

Extension

Switch the safety glasses on the balloon to the safety goggles and try different liquids or powder to observe the difference. Which eye ware is better for liquids? Solids?

Discussion

We only have two eyes so we have to protect them. When we are doing science experiments, do we have to protect our eyes? We are comparing two different balloons. One balloon is showing a safe choice and the other is not. Which balloon’s eyes are protected? Remember if your eyes are hurt or if there is something in your eyes tell an adult that you trust.

Teacher’s Note

A lot of activities that children participate in require eye protection. A sport is an activity that objects get thrown at the face all the time. Safety glasses will protect little eyes from getting harmed by flying objects.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Explore objects, materials and events in the environment

Make careful observations

Engage in simple investigations.

Make predictions

Make inferences, generalizations and explanations based on evidence.

Domain: Physical Well-Being and Motor Development

Strand: Physical Well- Being

Topic: Safety Practices

With modeling and support identify and follow basic safety rules.

Identify ways adults help to keep us safe

With modeling and support, identify the consequences of unsafe behavior

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

1.2.4 List ways to prevent common childhood injuries

Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

4.2.3 Demonstrate ways to respond in an unwanted, threatening, or dangerous situation.

Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a healthy-related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

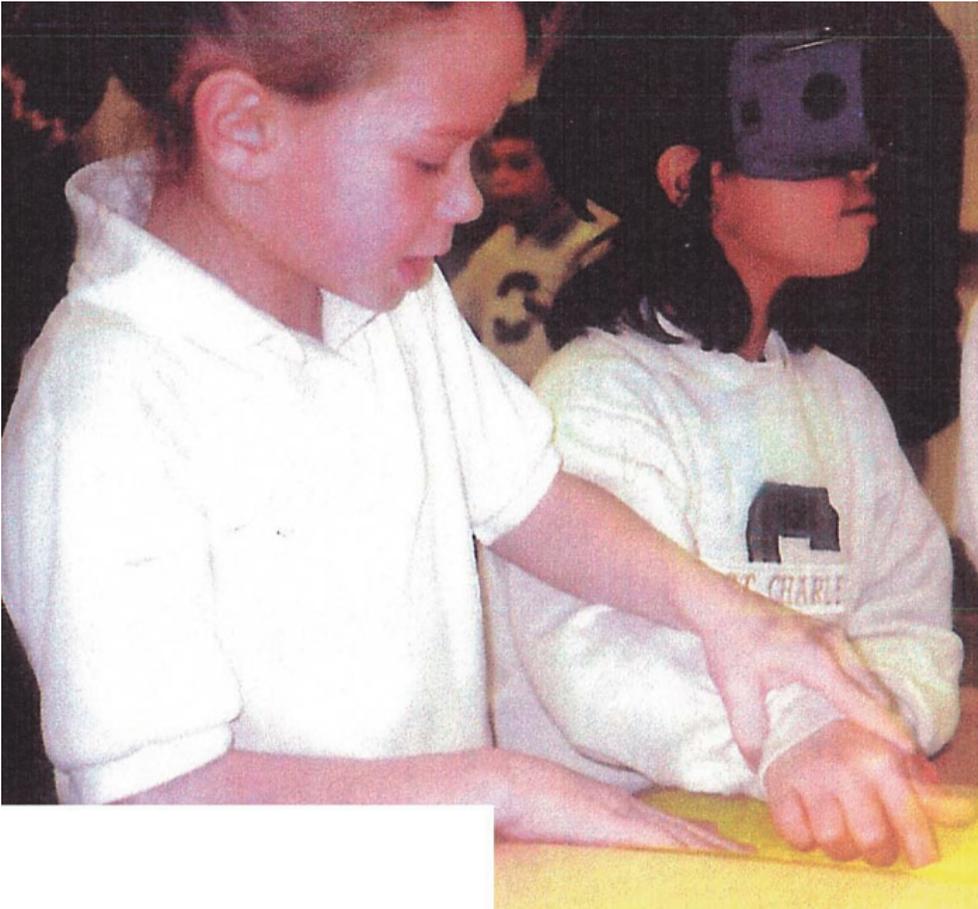
Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Lesson 4: Why Some People Need Glasses



Brian aids blindfolded Natasha in reading Braille.

Our eyes are very complex; therefore defects are bound to occur. It is estimated that as many as 90 percent of us have at least slightly imperfect eyesight. About 60 percent of people need corrective lenses to help them see better at time times, if not all the time. The need for corrective lenses after mid-life is nearly universal. Only a few enjoy perfect vision without correction throughout their entire life.

Vocabulary

- Amblyopia (Lazy Eye)
- Color Blindness
- Eye Patch
- Glasses
- Near vision
- Ophthalmologist
- Optometrist
- Optician
- Strabismus (Cross Eye)
- Vision Screening

Objectives

- Students will be able to define what an optometrist is.
- Students will explain why some people see differently than others.
- Students will be able to identify eye disorders that effect vision.

Teacher's Information

Over fifty percent of all people in the United States use some type of lens to correct their vision. More than twelve million school-age children, or one in four, has vision impairment. One in twenty preschoolers needs vision correction. Prevent Blindness America recommends eye exams at the following intervals: birth, six months, preschool, suspicion of an eye problem, and regularly through the school years to ensure good vision in both eyes.

If not detected early, vision problems in children can lead to a variety of problems. Untreated vision problems can lead to loss of vision, learning difficulties, and delays in development. Screening is a method of targeting vision problems early in life so that they can be diagnosed and treated appropriately. Screenings are typically conducted in primary care, school, and community settings. Screening is not for diagnosis or to determine treatment, but to provide information.

Eye Professionals:

During an eye doctor visit, the optometrist or ophthalmologist test for visual acuity using a vision chart. The term 20/20 vision describes how a person sees at a distance. With 20/20 vision an individual sees clearly at 20 feet, what the average vision sees at 20 feet. If someone is described as having 20/200 vision, they must be as close as 20 feet to see what a person with normal vision clearly sees at 200 feet. Many individuals with less than normal vision can achieve 20/20 vision through the use of contact lenses or glasses. 20/20 vision does not necessary indicate perfect vision. Additional factors such as near vision, peripheral vision, eye muscle coordination, depth perception, and color distinction are included in the determination of perfect vision.

There are three primary types of eye car professionals.

Ophthalmologist

An ophthalmologist is a physician (doctor of medicine or doctor or osteopathy) who specializes in comprehensive care of the eyes and visual system in the prevention of eye

injury and disease. They are qualified to diagnose, treat, and manage all eye and visual system problems and are licensed by the state regulatory board to practice medicine and surgery.

Optometrist

Doctors of optometry are independent primary health care providers who specialize in the examination, diagnosis, treatment and management of diseases and disorders of the visual system, the eye and associated structures, as well as the diagnosis of related systemic conditions. Their services include comprehensive eye health and vision examinations; diagnosis and treatment of eye diseases and vision disorders; prescribing glasses, contact lenses, low vision rehabilitation, vision therapy, drugs, and medications; and the counseling of patients regarding their vision needs as related to their occupation, hobbies and lifestyles.

Optician

Opticians are professionals in the field of designing, finishing, fitting and dispensing of eyeglasses and contact lenses, based on an eye doctor's prescription.

Common Vision Problems

Some vision problems are more common than others. The predominant eye problems seen in children include nearsightedness, crossed eyes, and lazy eye. Nearsightedness is the most common as it affects more than 25 percent of the population

Myopia (Nearsightedness)

Myopic or nearsighted people generally can see near objects clearly, but distant objects are out of focus. This is the result of a refractive error of the eye in which the image of a distant object is formed in front of the retina and cannot be seen distinctly; near objects are seen more clearly than distant objects. This is a common refractive error.

Hyperopia (Farsightedness)

Hyperopia or farsightedness occurs when the eyeball is too short. The reduced length means the point of focus lies beyond the back wall of the eyes, and light rays are not yet in focus when they arrive at the retina. Hyperopic people generally can see distant objects clearly, but near objects are out of focus. In more severe cases of hyperopia, even distant objects can be blurred. This is a common refractive error.

Astigmatism

The curvature of the cornea and/or the lens prevents light rays from focusing on a single point on the retina, resulting in a blurred image. Visual acuity is poor for near and far objects. Essentially, the cornea has a surface shaped more like a football or the back of a spoon, rather than being rounded like a basketball. This is a common refractive error.

Strabismus (Cross Eye)

Strabismus refers to eyes that are not straight or properly aligned. As a result of eye muscles not working together, one eye may turn in (crossed eye), turn out (wall eyes), turn up, or turn down. The deviation, or eye turn, may be constant or come and go. In some instances, it alternates eyes- first one eye turns then the other. In very young children, there often is an appearance of false or pseudo-strabismus caused by a wide spacing of skin between the eyes that covers more of the white of the eyes than in adults.

Pseudo-strabismus is a common source of vision screening over-referral that can be prevented by a correctly performed vision screening.

It is critical for strabismus to be diagnosed and corrected at an early age because children with uncorrected strabismus may go on to develop amblyopia, a loss of vision in an eye that has not been used. In young children, strabismus may vary not only from one day to the next, but during the course of a single day. The condition will usually worsen if the child is ill, upset, or tired.

The preschool years are critical in the development of a child's eyes. Parents/caregivers and health care professionals always should be vigilant of any misalignment in one or both eyes. In addition to hindering the development of useful vision, strabismus may affect a child's personality. Children with strabismus may become embarrassed by their problem, feeling that they look different. Strabismus sometimes can be found in conjunction with cerebral palsy, prematurity, and neurodevelopment conditions.

Amblyopia (Lazy Eye)

Amblyopia is reduced vision in an eye that has not received adequate use during early childhood. Conditions that cause amblyopia are Strabismus (Cross Eye) and Anisometropia (Unequal Refractive Error). Amblyopia can be detected by finding a difference in vision between eyes. An estimated 2 to 5% of the general population suffers from this visual impairment. If not treated early enough, an amblyopic eye may never develop good vision and may become functionally blind. A condition that causes amblyopia and is left untreated until about the age of 6 most often will result in permanent visual impairment. However, it is important that the treatment of amblyopia be pursued until at least age 10. The critical age for treatment to prevent permanent vision impairment varies from individual to individual. The earlier treatment is started, the more likely it will be easy and successful. Treatment to amblyopia involves two different steps. The first step is to correct the underlying vision problem, if it is caused by a refractive problem. The second step is to retrain the brain to use both eyes equally.

There are several conditions that cause amblyopia:

Strabismus (Cross Eye)

When one eye turns while the other is in straight gaze, a double image is sent to the brain. The brain solves the confusion by ignoring the message from the turned eye, which weakens from lack of use. However, early diagnosis and treatment can restore sight. As with visual acuity problems, the earlier the treatment, the better the opportunity to prevent permanent vision loss. If the strabismus requires a surgical correction, the amblyopia must be corrected first.

Anisometropia (Unequal Refractive Error)

Both eyes may be nearsighted or farsighted, but to differing degrees. Alternately, one eye may be farsighted and the other nearsighted. When there is a marked difference in refractive error between the eyes, the brain sees differing images from the two eyes and eventually ignores the eye with the poorest image.

Treatment for eye disorders

Treatment to correct eye disorders include:

- Glasses
 - Myopia
 - Hyperopia
 - Astigmatism
 - Strabismus (Eye turn)
 - Focusing Problem
- Eye drops or Ointments
 - Infections
 - Glaucoma
 - Strabismus
 - Amblyopia
- Patching one eye
 - Amblyopia
- Surgery to remove the lens
 - Cataract
 - Adjust an eye muscle if strabismus exists

Reading List

Arthur's Eyes by Marc Brown

The Eye Book by Ian Grierson

Jacob's Eye Patch by Beth Kobliner Shaw

The Patch by Justina Chen Headley and Mitch Vane

Web Resources

Do You Wear Glasses? Here's Why!

<https://faculty.washington.edu/chudler/sight.html>

American Association for Pediatric Ophthalmology and Strabismus- Glasses for Children

<http://www.aapos.org/terms/conditions/54>

Glossary of Terms and Conditions from AAPOS

<http://www.aapos.org/terms/conditions>

Childhood Eye Diseases and Conditions

<http://www.geteyesmart.org/eyesmart/living/babies-children-teenagers-eye-health/common-childhood-diseases-conditions.cfm>

All About Vision: Vision Therapy for Children

http://www.allaboutvision.com/parents/vision_therapy.htm

Activities

Optometrist Role-Playing

Objectives

- Students will become familiar with what an optometrist does through role playing.
- Students will become familiar with the process of an eye appointment to avoid nervousness.

Materials

Lea Chart (included in the teacher kit)

Doctor Coat (optional)

Glasses (optional)

Tape

Yard stick

Occluder (included in the teacher kit)

Activity Instructions

1. Tape down a line on the floor for students to put their feet on.
2. Hang eye chart or poster on the wall for students to identify.
3. Have students take turns listening to what the students see off the poster.
4. Direct the “optometrist” to have their patients cover one eye, then the other.

Extensions

Look online to find different charts. Have students identify (approximately) what their eye sight is. Who has the best eye sight?

Discussion

Who has ever been to an eye doctor before? An eye doctor has a special name, optometrist or ophthalmologist. An optometrist or ophthalmologist takes a look at your eyes and makes sure that they are healthy. They will ask you to look at a chart and tell them what you see. They will also look into your eyes to make sure your eyes are healthy. Remember, if you ever think that something is wrong with your eyes tell an adult. Take turns being the optometrist/ophthalmologist and the patient. The optometrist/ophthalmologist’s job is to point to the poster and listen to their patient to hear what they see on the chart. The patient’s job is to say out loud what they see. To make sure both eyes are working optometrist has the patient cover one eye with the occluder and then switch. Make sure we are taking turns being the optometrist/ophthalmologist and being the patient.

Teacher’s Note

See teacher information for more about an optometrist/ophthalmologist. The occluder is an instrument that optometrist/ophthalmologist’s use to ensure the patient’s entire eye is covered.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Strand: Cognitive Skills

Topic Symbolic Thought

Age: Pre- Kindergarten (3-5 years)

Participate cooperatively in complex pretend play, involving assigned roles and an overall plan.

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Make inferences, generalizations and explanations based on evidence

Share findings, ideas and explanations through a variety of methods

Domain: Physical Well-Being and Motor Development

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Topic: Safety Practices

Age: Pre- Kindergarten (3-5 years)

Identify ways adults help to keep us safe.

Centers for Disease Control and Prevention National Health Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Performance Indicators- Preschool- grade 2

1.2.1 Identify that healthy behaviors impact personal health

1.2.4 List ways to prevent common childhood injuries

Standard 3: Students will demonstrate the ability to access valid information, products, and services to enhance health.

Performance Indicators- Preschool- grade 2

3.2.1 Identify trusted adults and professional who can help promote health.

Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

4.2.3 Demonstrate ways to respond in an unwanted, threatening, or dangerous situation.

Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.

Performance Indicators- Preschool- grade 2

5.2.1 Identify situations when a healthy-related decision is needed

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Performance Indicators- Preschool- grade 2

7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health.

7.2.2 Demonstrate behaviors that avoid or reduce health risks

Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Performance Indicators- Preschool- grade 2

8.2.1 Make requests to promote personal health

8.2.2 Encourage peers to make positive health choices

Disorder Simulator

Objective

- Students will discover how vision impairment looks and feels.

Materials

- Eye Disease Glasses (Provided)
- Eye Disease Simulator Card
- White out
- Glasses

Activity Instructions

1. Each student will look through each set of glasses experiencing the different eye diseases.

Extensions

If more eye disease simulator glasses are desired you can make them by obtaining old un-prescribed glasses frames. Using white out, copy the disease as seen on the simulator card.

Discussion

Sometimes our eyes have trouble seeing clearly, therefore we do not see very well. There are a lot of reasons why this happens: our eye does not grow the right size, and our lenses are differently shaped, the eyeball is injured, or we have problems with our eyes when we are born.

Teachers' Note

Look at Teacher's Information for more information on the different disorders eyes can obtain. To learn more about being certified in Preschool Vision Screening please visit: <http://wiseabouteyes.preventblindness.org/educators/preschool-vision-screening-training.html>

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Make inferences, generalizations and explanations based on evidence

Share findings, ideas and explanations through a variety of methods

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Eye Patch Fun

Objectives

- Students will experience using an eye patch.
- Students will be able to identify how to help a lazy eye.

Materials

- Eye Patch
- Amblyopia Picture
- Amblyopia Disease Glasses

Activity Instruction

1. Have students look at the amblyopia picture and try on the glasses that represent amblyopia.
2. Next have students try on the eye to patch over the amblyopia glasses.
3. Ask students “how do you think a patch will help make a weak eye stronger?”

Extension

Hold a discussion about how wearing an eye patch is like wearing a band aid for your eye muscles: it's a way to fix a “boo boo.” Ask children what they would do if they saw someone wearing an eye patch? What would they do if they saw a child making fun of someone with an eye patch?

Another activity involves throwing a bean bag into a bucket from a designated starting line. Is it easy or hard? What about when using the eye patch?

Discussion

Some times our eyes need a little help. Some people have a lazy eye. This means that one eye is not working as hard as it should be and needs a little help. The other is working over time. Do you think this is very tiring for the other eye? If you have a lazy eye the eye doctor will recommend wearing an eye patch over the working eye. This forces the lazy eye to work; therefore after a while both eyes will be able to do the same amount of work.

Teacher’s Note

See Teacher’s Information on amblyopia information.

Standards

Ohio Early Learning and Development Standards

Domain: Cognition and General Knowledge

Sub- Domain: Science

Strand: Science Inquiry and Application

Topic: Inquiry

Age: Pre- Kindergarten (3-5 years)

Make Careful Observations

Make inferences, generalizations and explanations based on evidence

Share findings, ideas and explanations through a variety of methods

Strand: Physical Well-Being

Topic: Body Awareness

Age: Pre- Kindergarten (3-5 years)

Identify and describe the function of body parts

Lesson 5- A World Without Sight



Taking Care of Our Eyes stresses the importance of making wise lifestyle – safety choices to protect the precious gift of sight for a lifetime.

Summary:

We are all individuals and as individuals not all people see the same. An individual with vision impairment has eyesight that cannot be corrected to a “normal” level, making everyday tasks more difficult or impossible without adaptations. The impairment could be due to loss of visual acuity or loss of visual field caused by damage to the eye itself, the eye being shaped incorrectly, and the inability of the brain to process visual information correctly. Vision impairment can occur at any time in person’s life, but is more common in older people.

Vocabulary

- Blind
- Braille
- Braille Cell
- Color Blind
- Vision Impairment

Objective

- Students will be able to experience reading by touch
- Students will begin learning the concept of Braille
- Students will be able to tell others what blindness or vision impairment means.

Teacher Information

Blindness and Visual Impairment

The term “blindness” can have many connotations and is difficult to define. To many people, blindness refers to the complete loss of vision with no remain perception of light. However, this ultimate form of complete blindness is rare. Far more people have a permanent loss of some, but not all, of their eyesight. Vision impairment is defined as having 20/40 or worse vision even while wearing glasses. Legal blindness is defined as having 20/200 or worse vision in the better eye even with the best possible correction. Almost everyone with blindness or vision impairment can benefit from vision rehabilitation that can help make the most of whatever vision remains.

Color Blindness

In addition, some individuals have color blindness because the color-sensitive cones in their retina are either absent or do not work properly. Rarely individuals are unable to identify any colors. Color deficiency rather than color blindness is when the ability to distinguish certain colors and shades is less than normal. The two major types of color deficiency are red-green deficiency and blue-yellow deficiency. These result in the inability to perceive colors correctly and distinguish certain shades.

Vision Impairment

Vision Impairment affects each individual differently. Individuals with the same visual acuity may be able to see their remaining vision to function in their environments performing necessary tasks.

Visual Impairments can result in delays or limitations in motor, cognitive and social skills as it changes how a child experiences the world, understands the world and functions in the world. Approximately two- thirds of children with vision impairment also have one or more developmental disabilities.

Individuals Who are Blind

Individuals who are blind can do just about everything a person with sight can do, from play to education to occupations. Children who were blind used to go to special schools with other students who were blind. However, today most blind students attend schools within their community. When you are unable to use your sense of sight, you must rely on your other senses to obtain information. You need to listen, note specific smells, and use touch.

How do individuals who are blind accomplish daily tasks?

The sense touch is very important to someone who is blind. When identifying clothing unique features can be used for identification; buttons, bows, zippers, textures, and other features. Buttons can be added and/or corners of tags can be cut off to identify clothing as well. When shopping for groceries touch, smell, hear, and taste can help in identifying food. Shape, size, weight, and sound are also used to identify food items. Someone might go to the store with them to help them read labels and find items. Once at home rubber bands and magnets could be used to identify the food.

When cooking someone who is blind has to use all of their senses. Senses can be used to determine the smell, sound, temperature, time of cooking, texture, and consistency when cooking. Special training programs and tools are available to help with cooking tasks. Advances in technology assist in cooking; a liquid level indicator will beep when a container is full.

Braille

We read with our eyes. However people who are blind read with their fingers. They use a system call Braille. Braille is a system of raised dots that form letters that can be read with the fingertips.

The basic Braille cell is made up of two columns with three dots in each. These six dots are used in various combinations to express words, punctuation, numbers, and musical notes. Individuals who are blind memorize the different combinations and their meanings. See the appendix for more information about braille writing.

Reading List

Looking Out for Sarah by Glenna Lang

Do You Remember the Color Blue? Questions Children Ask About Blindness by Sally Hobart Alexander

Some Kids Are Blind by Lola M. Schaefer

Guide Dogs! A Kids Book About Guide & Other Assistance Dogs by Lionel Paxton

Web Resources

Braille Bug

<http://braillebug.afb.org/>

Kids Health: Blindness

http://kidshealth.org/kid/health_problems/sight/visual_impaired.html

MedLine Plus: Blindness and Vision Loss

<http://www.nlm.nih.gov/medlineplus/ency/article/003040.htm>

What is Braille?

<http://www.nbp.org/ic/nbp/braille/whatisbraille.html>

Guide Dogs for the Blind: Resource page for Parents and Teachers

http://www.guidedogs.com/site/PageServer?pagename=resources_links_parents

How Guide Dog Works

<http://animals.howstuffworks.com/animal-facts/guide-dog.htm>

Activities

Braille Exploration

Objective

- Students will experience how people who are visually impaired read with using only their sense of touch.

Materials

- Braille Alphabet Card (provided)
- Push pins
- Cardboard or Styrofoam
- Line outline (Located in appendix)

Activity Instructions

1. Place cardboard/Styrofoam on table.
2. Place line outline on cardboard/Styrofoam
3. Poke push pin on each dot.
4. Turn the paper over and feel the line.

Extensions

Have students close their eyes and feel each line, to determine which one is straight and curved. Print out lines of letters and numbers for students to pin prick the outline. But remember they the bumpy letter will be backwards.

Discussion

What sense do we read with? Some people have eyes that do not work correctly, therefore they cannot see at all. People who cannot see at all are called blind. Instead of using their sight of vision they use their sense of touch to read. They feel dots called Braille. Today we are going to see with our fingers as well. There is a worksheet with three different lines. Poke the dots with the push pin. After each dot is poked, follow the dots with your finger. Which line is curved, and which line is straight?

Teacher's Note

We read with our eyes. However people who are blind read with their fingers. They use a system call Braille. Braille is a system of raised dots that form letters that can be read with the fingertips.

Standards

Ohio Early Learning and Development Standards

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Hands on Braille Cell

Objective

- Students will explore the Braille Cell and how dots in different places represent a different letter.

Materials

- Muffin Tin (2x3)
- Tennis Balls
- Bucket to hold the Tennis Balls

Activity Instructions

1. Print off the Braille Alphabet Chart (included in appendix)
2. Students will then use the tennis balls to recreate the different letter. Have students do letters in order.

Extension

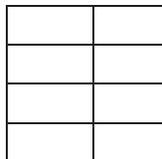
Make flashcards out of the alphabet chart, so students can focus on one letter at a time. Have multiple muffin tins and tennis balls, so students can recreate words.

Discussion

What sense do blind people read with? We are going to explore the alphabet in Braille. This chart shows all of the different letters, in those little dots. Remember each letter is represented as a different pattern of dots. The muffin tray is going to represent a Braille cell, a Braille cell tells how the dots are set up. The tennis balls are our dots. You are going to copy the picture of dots that are next to the letter. Feel with your fingers on how different they each feel.

Teacher's Note

The basic Braille cell is made up of two columns with three dots in each. These six dots are used in various combinations to express words, punctuation, numbers, and musical notes. Individuals who are blind memorize the different combinations and their meanings. Below is how a basic Braille cell looks and how each dot is numbered. Located in templates is the Braille Alphabet.



Standards

Ohio Early Learning and Development Standards

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Braille Beans

Objective

- Students will be able to match like letters
- Students will translate their name into Braille

Materials

- Braille Alphabet (Included in appendix)
- Dried Beans
- Construction paper
- Glue
- Pencil

Activity Instructions

1. Write the student's name large on the construction paper (leave room on top)
2. Have students find the letters on the Braille alphabet.
3. Make the same dot pattern.
4. Glue the bean pattern above the letters of the name.

Extension

Students can write their own letters to their name. Objects besides beans can also be used.

Discussion

Braille is dots in different patterns. Each pattern matches a different letter. You are going to have a chance to see your name in Braille today. I am going to write your name at the bottom of the paper. Find each letter of your name on the chart. Count how many dots there are for that letter. Pick up that many beans. Then make the same pattern as the chart, and then glue them down above that letter.

Teacher's Note

We read with our eyes. However people who are blind read with their fingers. They use a system call Braille. Braille is a system of raised dots that form letters that can be read with the fingertips.

The basic Braille cell is made up of two columns with three dots in each. These six dots are used in various combinations to express words, punctuation, numbers, and musical notes. Individuals who are blind memorize the different combinations and their meanings. Below is how a basic Braille cell looks and how each dot is numbered. Located in templates is the Braille Alphabet.

Standards

Ohio Early Learning and Development Standards

Domain: Physical Well-Being and Motor Development

Strand: Motor Development

Topic: Small Muscle: touch, grasp, reach, manipulate

Age: Pre- Kindergarten (3-5 years)

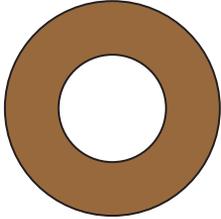
Coordinate the use of hands, fingers and wrists to manipulate objects and perform asks requiring precise movements.

Appendix

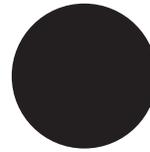
Any template included in activity instructions will be located in the following section. We would like to remind teachers, however, that these are just suggestions to get you started! Feel free to adjust, expand, use, or not use these worksheets to best fit the needs of your classroom.

Eye Puzzle Label (Activity: Eye Puzzle Anatomy)

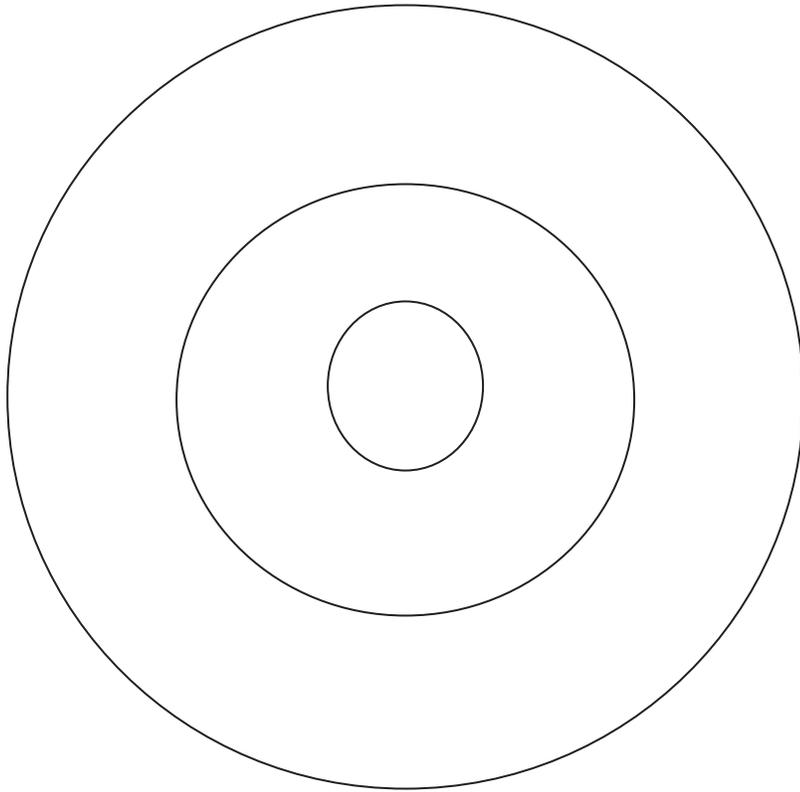
Iris



Pupil



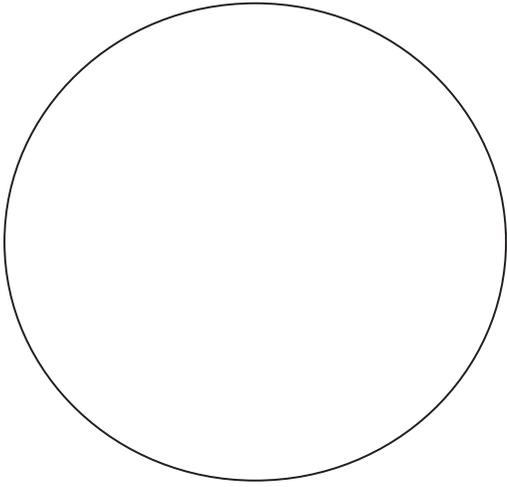
My Eye (Eyes of the Classroom Activity)



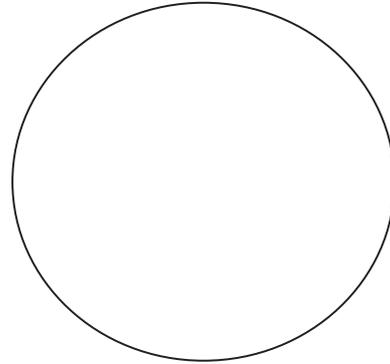
Name: _____

Pupil Changes

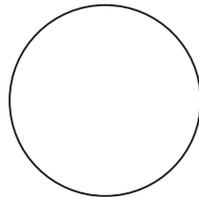
Black Construction Paper:



Pupil- Dark

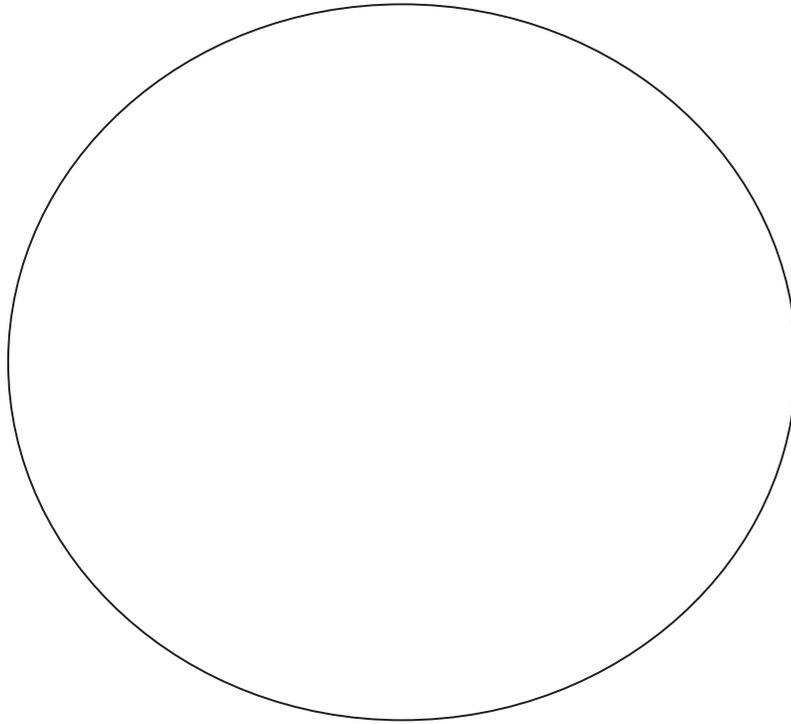


Pupil- Normal Light



Pupil: Bright Light

On Green, Blue, and Brown Construction

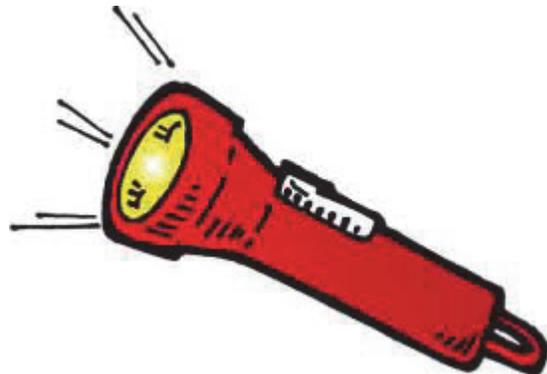
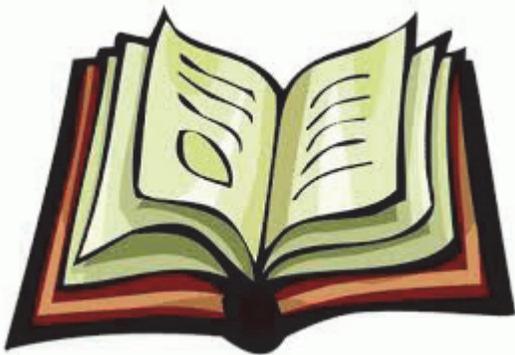


Iris

Traced/Cut out on White Construction Paper

LIGHT AND DARK

Cut out the items below. Then place them on the correct side of the next page. Are they things that you see or use at night? Or in the day time?



Name _____

In the Day (light)

In the Night (Dark)



My Food Group Sort

Healthy

Unhealthy



My Food Group Sort



bread

strawberry



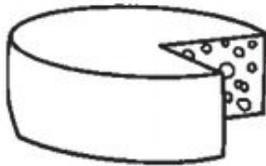
cottage
cheese



cheese

hamburger

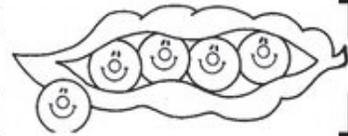
peas



ice cream



cake



cupcake



chips



bacon



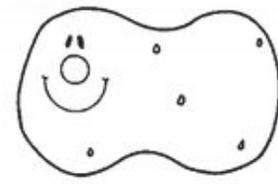
potato



eggs



milk



pineapple



Created by Mrs. Thiessen

My Family Has Different Colored Eyes

We are learning about our eyes in our classroom. With your help we will be able to figure out how many blue eyes, green eyes and brown eyes we have in our families. Your child your figure out the color (iris) of your eye, and then color in that box with that color. At the bottom there is room for you to add multiple relatives. Thank you for your help.

My mommy has eyes.

My daddy has eyes

My brother has eyes

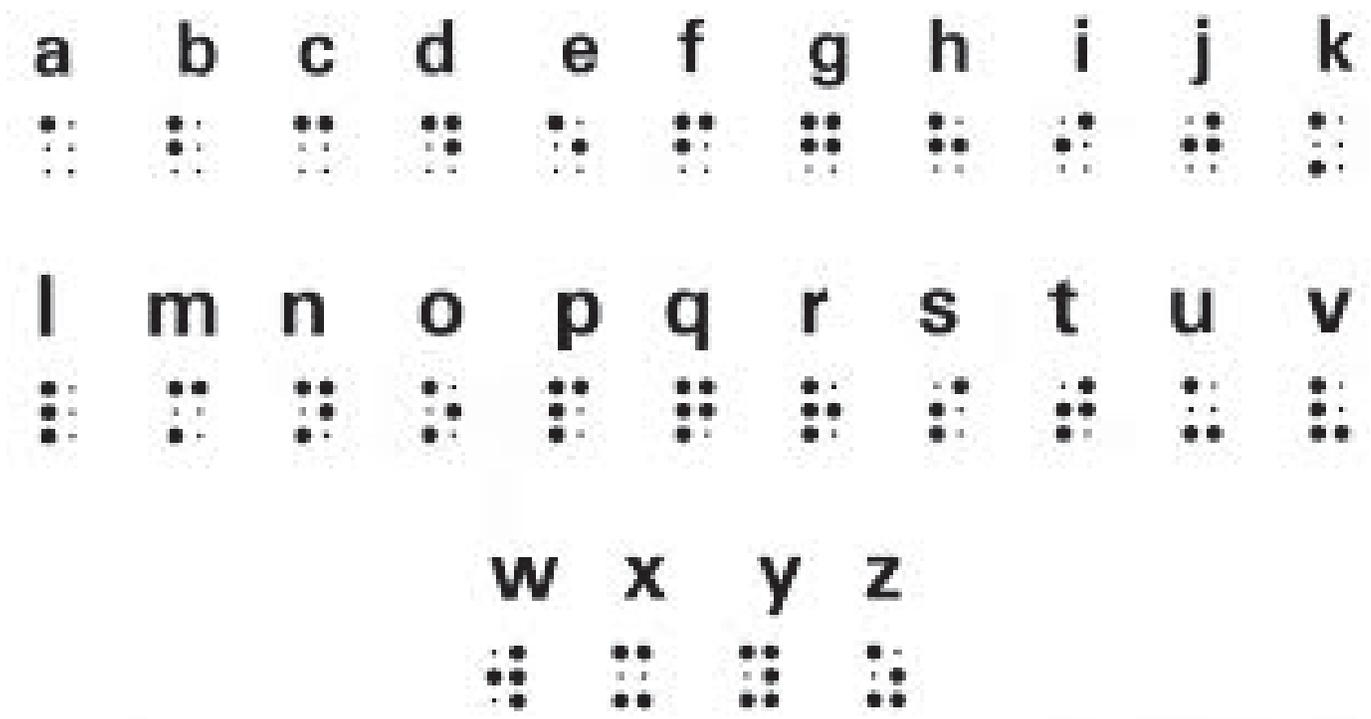
My sister has eyes

Add any other relative

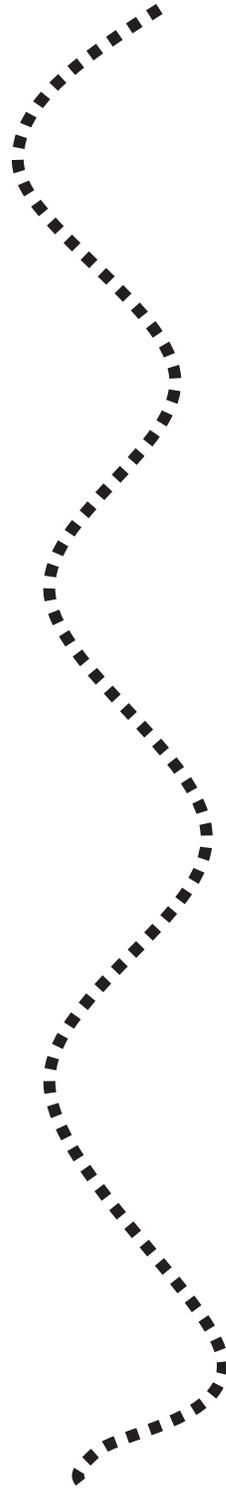
My _____ has eyes.

My _____ has eyes

The Braille alphabet



Braille Line Worksheet



Eye Examination in Infants, Children, and Young Adults by Pediatricians

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

Committee on Practice and Ambulatory Medicine Section on Ophthalmology, American Association of Certified Orthoptists, American Association For Pediatric Ophthalmology and Strabismus, American Academy of Ophthalmology

Early detection and prompt treatment of ocular disorders in children is important to avoid lifelong visual impairment. Examination of the eyes should be performed beginning in the newborn period and at all well-child visits. Newborns should be examined for ocular structural abnormalities, such as cataract, corneal opacity, and ptosis, which are known to result in visual problems. Vision assessment beginning at birth has been endorsed by the American Academy of Pediatrics, the American Association of Pediatric Ophthalmology and Strabismus, and the American Academy of Ophthalmology. All children who are found to have an ocular abnormality or who fail vision assessment should be referred to a pediatric ophthalmologist or an eye care specialist appropriately trained to treat pediatric patients. *Ophthalmology* 2003;110:860–865 © 2003 by the American Academy of Ophthalmology.

Introduction

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 neurologic disorders can be identified, and prompt treatment of these conditions can save a child's vision or even life. Examination of the eyes should be performed beginning in the newborn period and at all well-child visits. Visual acuity measurement should be performed at the earliest possible age that is practical (usually at approximately 3 years of age). Early detection and prompt treatment of ocular disorders in children is important to avoid lifelong permanent visual impairment.

The material contained in the attached statement has not been approved as policy of the American Academy of Pediatrics and should not be made public under any circumstances.

If and when the statement is approved in its final form, it will be distributed to the membership of the Academy before dissemination to the public. Therefore, an embargo date for release to the public and press will be placed on the statement following its approval by the Board of Directors.

Timing Of Examination And Screening

Children should have an assessment for eye problems in the newborn period and then at all subsequent routine health supervision visits. These should be age-appropriate evaluations as described in subsequent sections. Infants and children at high risk of eye problems should be referred for specialized eye examination by an ophthalmologist experienced in treating children. This includes children who are very premature; those with family histories of congenital cataracts, retinoblastoma, and metabolic or genetic diseases; those who have significant developmental delay or neurologic difficulties; and those with systemic disease associated with eye abnormalities. Because children do not complain of visual difficulties, visual acuity measurement (vision screening) is an important part of complete pediatric eye care and should begin at 3 years of age. To achieve the most accurate testing possible, the most sophisticated test that the child is capable of performing should be used (Table 1)^{1,2} The frequency of examinations recommended is in accordance with the AAP "Recommendations for Preventive Pediatric Health Care."² Any child unable to be tested after 2 attempts or in whom an abnormality is suspected or detected should be referred for an initial eye evalua-

Table 1. Eye Examination Guidelines*

Ages 3–5 Years			
Function	Recommended Tests	Referral Criteria	Comments
Distance visual acuity	Snellen letters Snellen numbers Tumbling E HOTV Picture tests –Allen figures –LEA symbols	1. Fewer than 4 of 6 correct on 20-ft line with either eye tested at 10 ft monocularly (ie, less than 10/20 or 20/40) or 2. Two-line difference between eyes, even within the passing range (ie, 10/12.5 and 10/20 or 20/25 and 20/40)	1. Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3–5 years of age and Snellen letters or numbers for children 6 years and older. 2. Testing distance of 10 ft is recommended for all visual acuity tests. 3. A line of figures is preferred over single figures. 4. The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to eye; the examiner must ensure that it is not possible to peek with the nontested eye. Child must be fixing on a target while cross cover test is performed
Ocular alignment	Cross cover test at 10 ft (3 m) Random dot E stereo test at 40 cm Simultaneous red reflex test (Bruckner test)	Any eye movement Fewer than 4 of 6 correct Any asymmetry of pupil color, size, brightness	Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2 to 3 feet away; detects asymmetric refractive errors as well.
Ocular media clarity (cataracts, tumors, etc)	Red reflex	White pupil, dark spots, absent reflex	Direct ophthalmoscope, darkened room. View eyes separately at 12 to 18 inches; white reflex indicates possible retinoblastoma.
6 Years and Older			
Function	Recommended Tests	Referral Criteria	Comments
Distance visual acuity	Snellen letters Snellen numbers Tumbling E HOTV Picture tests –Allen figures –LEA symbols	1. Fewer than 4 of 6 correct on 15-ft line with either eye tested at 10 ft monocularly (ie, less than 10/15 or 20/30) or 2. Two-line difference between eyes, even within the passing range (ie, 10/10 and 10/15 or 20/20 and 20/30)	1. Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3–5 years of age and Snellen letters or numbers for children 6 years and older. 2. Testing distance of 10 ft is recommended for all visual acuity tests. 3. A line of figures is preferred over single figures. 4. The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to eye; the examiner must ensure that it is not possible to peek with the nontested eye. Child must be fixing on a target while cross cover test is performed
Ocular alignment	Cross cover test at 10 ft (3 m) Random dot E stereo test at 40 cm Simultaneous red reflex test (Bruckner test)	Any eye movement Fewer than 4 of 6 correct Any asymmetry of pupil color, size, brightness	Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2 to 3 feet away; detects asymmetric refractive errors as well.
Ocular media clarity (cataracts, tumors, etc)	Red reflex	White pupil, dark spots, absent reflex	Direct ophthalmoscope, darkened room. View eyes separately at 12 to 18 inches; white reflex indicates possible retinoblastoma.

*Assessing visual acuity (vision screening) represents one of the most sensitive techniques for the detection of eye abnormalities in children. The AAP Section on Ophthalmology, in cooperation with AAPOS and AAO, has developed these guidelines to be used by physicians, nurses, educational institutions, public health departments, and other professionals who perform vision evaluation services.

tion by an ophthalmologist experienced in the care of children.

Procedures For Eye Evaluation

Eye evaluation in the physician’s office should include the following:

Birth to 3 Years of Age

1. Ocular history

2. Vision assessment
3. External inspection of the eyes and lids
4. Ocular motility assessment
5. Pupil examination
6. Red reflex examination

3 Years and Older

1 through 6, plus:

7. Age-appropriate visual acuity measurement
8. Attempt at ophthalmoscopy

Ocular History

Parents' observations are valuable. Questions that can be asked include:

- Does your child seem to see well?
- Does your child hold objects close to his or her face when trying to focus?
- Do your child's eyes appear straight or do they seem to cross or drift or seem lazy?
- Do your child's eyes appear unusual?
- Do your child's eyelids droop or does 1 eyelid tend to close?
- Have your child's eye(s) ever been injured?

Relevant family histories regarding eye disorders or preschool or early childhood use of glasses in parents or siblings should be explored.

Vision Assessment

Age 0 to 3 Years. Vision assessment in children younger than 3 years or any nonverbal child is accomplished by evaluating the child's ability to fix and follow objects.^{3,4} A standard assessment strategy is to determine whether each eye can fixate on an object, maintain fixation, and then follow the object into various gaze positions. Failure to perform these maneuvers indicates significant visual impairment. The assessment should be performed binocularly and then monocularly. If poor fix and following is noted binocularly after 3 months of age, a significant bilateral eye or brain abnormality is suspected, and referral for more formal vision assessment is advisable.⁵ It is important to ensure that the child is awake and alert, because disinterest or poor cooperation can mimic a poor vision response.

Visual Acuity Measurement or Vision Screening (Older Than 3 Years)

Various tests are available to the pediatrician for measuring visual acuity in older children. Different picture tests, such as LH symbols (LEA symbols) and Allen cards, can be used for children 2 to 4 years of age. Tests for children older than 4 years include wall charts containing Snellen letters, Snellen numbers, the tumbling E test, and the HOTV test (a letter-matching test involving these 4 letters).⁶ A study of 102 pediatric practices revealed that 53% use vision testing machines.³ Because testing with these machines can be difficult for younger children (3-4 years of age), pediatricians should have picture cards and wall charts available.

Photoscreening

Using this technique, a photograph is produced by a calibrated camera under prescribed lighting conditions, which shows a red reflex in both pupils. A trained observer can identify ocular abnormalities by recognizing characteristic changes in the photographed pupillary reflex.⁷ When performed properly, the technique is fast, efficient, reproducible, and highly reliable. Photoscreening is not a substitute for accurate visual acuity measurement but can provide significant information about the presence of sight-threat-

ening conditions, such as strabismus, refractive errors, media opacities (cataract), and retinal abnormalities (retinoblastoma). Photoscreening techniques are still evolving. (For further information, see also the AAP policy statement, "Use of Photoscreening for Children's Vision Screening."⁸)

External Examination (Lids/Orbit/Cornea/Iris)

External examination of the eye consists of a penlight evaluation of the lids, conjunctiva, sclera, cornea, and iris. Persistent discharge or tearing may be attributable to ocular infection, allergy, or glaucoma, but the most common cause is lacrimal duct obstruction. It often manifests during the first 3 months as persistent purulent discharge out of 1 or both eyes. Topical or oral antibiotics should be given, and lacrimal sac massage should be attempted. Because these same findings are often seen in congenital glaucoma, failure to promptly resolve after treatment or the presence of cloudy or asymmetrically enlarged corneas should prompt ophthalmologic referral for further evaluation.

Unilateral ptosis can cause amblyopia by inducing astigmatism, even if the pupil is not occluded. Patients with this condition require ophthalmic evaluation. Bilateral ptosis may be associated with significant neurologic disease, such as myasthenia. Further investigation by a child neurologist and pediatric ophthalmologist is warranted.

Ocular Motility

The assessment of ocular alignment in the preschool and early school-aged child is of considerable importance. The development of strabismus in children may occur at any age and can represent serious orbital, intraocular, or intracranial disease. The corneal reflex test, cross cover test, and random dot E stereo test are useful in differentiating true strabismus from pseudostrabismus (see Appendix 1). The most common cause of pseudostrabismus is prominent epicanthal lid folds that cover the medial portion of the sclera on both eyes, giving the impression of crossed eyes (esotropia). Detection of an eye muscle imbalance or inability to differentiate strabismus from pseudostrabismus necessitates a referral.

Pupils

The pupils should be equal, round, and reactive to light in both eyes. Slow or poorly reactive pupils may indicate significant retinal or optic nerve dysfunction. Asymmetry of pupil size, with 1 pupil larger than the other, can be attributable to a sympathetic disorder (Horner syndrome) or a parasympathetic abnormality (third nerve palsy, Adie syndrome). Small differences can occur normally and should be noted in the chart for reference in case of subsequent head injury. Larger pupil asymmetries (>1 mm) can be attributable to serious neurologic disorders and need further investigation.

Red Reflex Test (Monocular and Binocular, Bruckner Test)

The red reflex test can be used to detect opacities in the visual axis, such as a cataract or corneal abnormality, and

abnormalities of the back of the eye, such as retinoblastoma or retinal detachment. When both eyes are viewed simultaneously, potentially amblyogenic conditions, such as asymmetric refractive errors and strabismus, also can be identified. The test should be performed in a darkened room (to maximize pupil dilation). The direct ophthalmoscope is focused on each pupil individually approximately 12 to 18 inches away from the eye, and then both eyes are viewed simultaneously at approximately 3 feet away. The red reflex seen in each eye individually should be bright reddish-yellow (or light grey in darkly pigmented, brown-eyed patients) and identical in both eyes. Dark spots in the red reflex, a blunted dull red reflex, lack of a red reflex, or presence of a white reflex are all indications for referral. After assessing each eye separately, the eyes are viewed together with the child focusing on the ophthalmoscope light (Bruckner test, see Appendix 1). As before, any asymmetry in color, brightness, or size is an indication for referral, because asymmetry may indicate an amblyogenic condition.

Visual Acuity Measurement (Vision Screening)

Visual acuity testing is recommended for all children starting at 3 years of age.⁶ In the event that the child is unable to cooperate for vision testing, a second attempt should be made 4 to 6 months later. For children 4 years and older, the second attempt should be made in 1 month. Children who cannot be tested after repeated attempts should be referred to an ophthalmologist experienced in the care of children for an eye evaluation. Appendix 1 provides a detailed explanation of the techniques available for visual acuity measurement in children.

Ophthalmoscopy

Ophthalmoscopy may be possible in very cooperative 3- to 4-year-olds who are willing to fixate on a toy while the ophthalmoscope is used to evaluate the optic nerve and retinal vasculature in the posterior pole of the eye.

Recommendations

1. All pediatricians and other providers of health care to children should be familiar with the joint eye examination guidelines of the AAPOS, AAO, and AAP.
2. Every effort should be made to ensure that eye examinations are performed using appropriate testing conditions, instruments, and techniques.
3. Newborns should be evaluated for ocular structural abnormalities, such as cataract, corneal opacities, and ptosis, which are known to result in vision problems, and all children should have their eyes examined on a regular basis.¹
4. The results of vision assessments, visual acuity measurements, and eye evaluations, along with instructions for follow-up care, should be clearly communicated to parents.²
5. All children who are found to have an ocular abnormality or who fail vision screening should be referred

to a pediatric ophthalmologist or an eye care specialist appropriately trained to treat pediatric patients.

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Appendix 1. Testing Procedures for Assessing Visual Acuity

The child should be comfortable and in good health at the time of the examination. It is often convenient to have younger children sit on a parent's lap. If possible, some preparation before the actual testing situation is helpful, and parents can assist by demonstrating the anticipated testing procedures for their child. Children who have eyeglasses generally should have their vision tested while wearing the eyeglasses. Eyeglasses prescribed for use only while reading should not be worn when distance acuity is being tested.

Consideration must be given to obtaining good occlusion of the untested eye; cardboard and paddle occluders have been found inadequate for covering the eye because they allow "peeking." Commercially available occluder patches provide complete occlusion necessary for appropriate testing.¹ Vision testing should be performed at 10 feet (except Allen cards) and in a well-lit area. When ordering wall charts, be sure to indicate that a 10-foot testing distance will be used.

Visual Acuity Tests

Snellen Acuity Chart. When performing visual acuity testing, test the child's right eye first by covering the left. A child who has corrective eyeglasses should be screened wearing the eyeglasses. Tell the child to keep both eyes open during testing. If the child fails the practice line, move up the chart to the next larger line. If the child fails this line, continue up the chart until a line is found that the child can pass. Then move down the chart again until the child fails to read a line. After the child has correctly identified 2 symbols on the 10/25 line, move to the critical line (10/20 or 20/40 equivalent). To pass a line, a child must identify at least 4 of the 6 symbols on the line correctly. Repeat the above procedure covering the right eye.

Tumbling E. For children who may be unable to perform vision testing by letters and numbers, the tumbling E or HOTV test may be used. Literature is available from the AAO (Home Eye Test, American Academy of Ophthalmology, PO Box 7424, San Francisco, CA 94109, 415/561-8500 or <http://www.aao.org>) and Prevent Blindness America (Preschoolers Home Eye Test, Prevent Blindness America, 500 East Remington Rd, Schaumburg, IL 60173, 847/843-2020 or <http://www.preventblindness.com>) for home use by parents to prepare children for the tumbling E

test. This literature contains the practice Es, a tumbling E wall chart, and specific instructions for parents.

HOTV Test (Matching Test). An excellent test for children who are unable to perform vision testing by verbally identifying letters and numbers is the HOTV matching test. This test consists of a wall chart composed only of Hs, Os, Ts, and Vs. The child is provided an 8½ × 11-inch board containing a large H, O, T, and V. The examiner points to a letter on the wall chart, and the child points to (matches) the correct letter on the testing board. This can be especially useful in the 3- to 5-year-old who is unfamiliar with the alphabet.

Allen Cards. The Allen card test consists of 4 flash cards containing 7 schematic figures: a truck, house, birthday cake, bear, telephone, horse, and tree. When viewed at 20 feet, these figures represent 20/30 vision. It is important that a child identify verbally or by matching all 7 pictures before actual visual testing. Testing should only be performed with the figures that the child readily identified. Perform initial testing with the child having both eyes open, viewing the cards at 2 to 3 feet away. Present 1 or 2 figures to ensure that the child understands the testing procedure. Then begin walking backward 2 to 3 feet at a time, presenting different pictures to the child. Continue to move backward as long as the child directly calls out the figures presented. When the child begins to miss the figures, move forward several feet to confirm that the child is able to identify the figures at the shorter distance. To calculate an acuity score, the furthest distance at which the child is able to identify the pictures accurately is the numerator and 30 is the denominator. Therefore, if a child were able to identify pictures accurately at 15 feet, the visual acuity would be recorded as 15/30. This is equivalent to 30/60, 20/40, or 10/20. To perform this test in the same way as for HOTV testing, a "matching panel" of all of the Allen figures may be prepared on a copy machine.

LH Symbols (LEA Symbols). The LH symbol test is slightly different from the Allen card test in that it is made up of flash cards held together by a spiral binding. The flash cards contain large examples of a house, apple, circle, and square; these should be presented to the child before formal vision testing to see if they can be correctly identified. Unlike the Allen cards, the LH symbol test contains flash cards with more than 1 figure per card and with smaller figure sizes so that testing may be performed at 10 feet. Recorded on each card is the symbol size and visual acuity value for a 10-foot testing distance. The visual acuity is determined by the smallest symbols that the child is able to identify accurately at 10 feet. For example, if the child is able to identify the 10/15 symbol at 10 feet, the child's visual acuity is 10/15 or 20/30.

If it is not possible to perform testing at 10 feet, move closer to the child until he or she correctly identifies the largest symbol. At this point, proceed down in size to the smallest symbols the child is consistently able to correctly identify. The vision is recorded as the smallest symbol identified (bottom number) at the testing distance (top number). For example, correctly identifying the 10/15 symbols at 5 feet is recorded as 5/15 or 20/60. Likewise, identifying the 10/30 symbols at 2 feet is 2/30 or 20/300 (both the bottom and top numbers can be multiplied or divided by the same number

to give an equivalent vision.) A “matching panel” is provided with the LH test and may be helpful in testing very young children. At least 3 of 4 figures should be identified for each size or distance.

Testing Procedures for Assessing Ocular Alignment

Corneal Light Reflex Test. A penlight may be used to evaluate light reflection from the cornea. The light is held approximately 2 feet in front of the face to have the child fixate on the light. The corneal light reflex (small white dot) should be present symmetrically and appear to be in the center of both pupils. A reflex that is off center in 1 eye may be an indication of an eye muscle imbalance. A slight nasal displacement of the reflex is normal, but a temporal displacement is almost never seen unless the child has a strabismus (esotropia).

Simultaneous Red Reflex Test (Bruckner Test). This test can detect amblyogenic conditions, such as unequal refractive errors (unilateral high myopia, hyperopia, or astigmatism), as well as strabismus and cataracts. When both eyes are viewed simultaneously through the direct ophthalmoscope in a darkened room from a distance of approximately 2 to 3 feet with the child fixating on the ophthalmoscope light, the red reflexes seen from each eye should be equal in size, brightness, and color. If 1 reflex is different from the other (lighter, brighter, or bigger), there is a high likelihood that an amblyogenic condition exists. Any child with asymmetry should be referred for further evaluation. Examples of normal and abnormal Bruckner test appearances are available from the AAP. “See Red” cards are available for purchase at <http://www.aap.org/sections/ophthal.htm>.

Cross Cover Test. To perform the cross cover test, have the child look straight ahead at an object 10 feet (3 meters) away. This could be an eye chart for older children or a colorful noise-making toy for younger children. As the child looks at a distant object, cover 1 eye with an occluder and look for movement of the uncovered eye. As an example, if the occluder is covering the left eye, movement is looked for in the uncovered right eye. This movement will occur immediately after the cover is placed in front of the left eye. If the right eye moves outward, the eye was intorted or esotropic. If the right eye moves inward, it was out-turned or exotropic. After testing the right eye, test the left eye for movement in a similar manner. If there is no apparent misalignment of either eye, move the cover back and forth between the 2 eyes, waiting about 1 to 2 seconds between movements. If after moving the occluder, the uncovered eye moves in or out to take up fixation, a strabismus is present. Any movement in or out when shifting the cover indicates a strabismus is present, and a referral should be made to an ophthalmologist.

Random Dot E Stereo Test. The random dot E stereo test measures stereopsis. This is different from the light reflex test or the cover test, which detects physical misalignment of the eyes. Stereopsis can be absent in patients with straight eyes. An ophthalmologic evaluation is necessary to detect the causes of poor stereo vision with straight eyes. To perform the random dot E stereo test, the cards should be held 16 inches from the child’s eyes. Explain the test to the child. Show the child the grey side of the card that says “model” on it. Hold the model E in the direction at which the child can read it correctly. Have the child touch the model E to understand better that the picture will stand out. A child should be able to indicate which direction the legs are pointing. Place the stereo glasses on the child. If the child is wearing eyeglasses, place the stereo glasses over the child’s glasses. Make sure the glasses stay on the child and the child is looking straight ahead. The child should be shown both the stereo blank card and the raised and recessed E card simultaneously. Hold each card so you can read the back. The blank card should be held so you can read it. The E card should be held so you can read the word “raised.” Both cards must be held straight. Do not tilt the cards toward the floor or the ceiling—this will cause darkness and glare. Ask the child to look at both cards and to point to or touch the card with the picture of the E. The E must be presented randomly, switching from side to side. The child is shown the cards up to 6 times. To pass the test, a child must identify the E correctly in 4 of 6 attempts.

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Children's Sports Eye Safety Position Statement



Position Statement

Many children and adolescents participate in athletics. Some sports present a heightened risk for serious eye injury and blindness. To reduce the occurrence of sports-related eye injuries and blindness, Prevent Blindness strongly supports efforts to ensure that children involved in athletics utilize appropriate safety eyewear for every sport in which they participate.

To this end, we recommend that:

- School and youth athletic league programs along with state-based programs must educate children, coaches, and parents about the importance of wearing appropriate sports eye protection.
- Appropriate protective eyewear for sports should be chosen only after consultation with an eye doctor, physician, or athletic trainer and must be appropriate for the particular sport and the child's size.
- Children and adolescents should only wear sports eye protectors that meet the standards set forth by American Society for Testing and Materials (ASTM) and American National Standards Institute (ANSI).
- State legislators should adopt legislation requiring the use of protective eyewear among children of any age when participating in medium to high-risk sports (as listed in the American Academy of Pediatrics Protective Eyewear for Young Athletes policy¹) through school, youth league and collegiate athletic programs. Protective eyewear should be mandatory for all athletes who are functionally monocular (one-eyed).
- Sports eyewear that does not conform to the standards outlined by ASTM and ANSI should be banned by school, community and collegiate sport programs.
- Appropriate sports eyewear should be made available through funding similar to other equipment such as helmets, uniforms and pads to children who participate in school and community sports programs for children who cannot afford them.

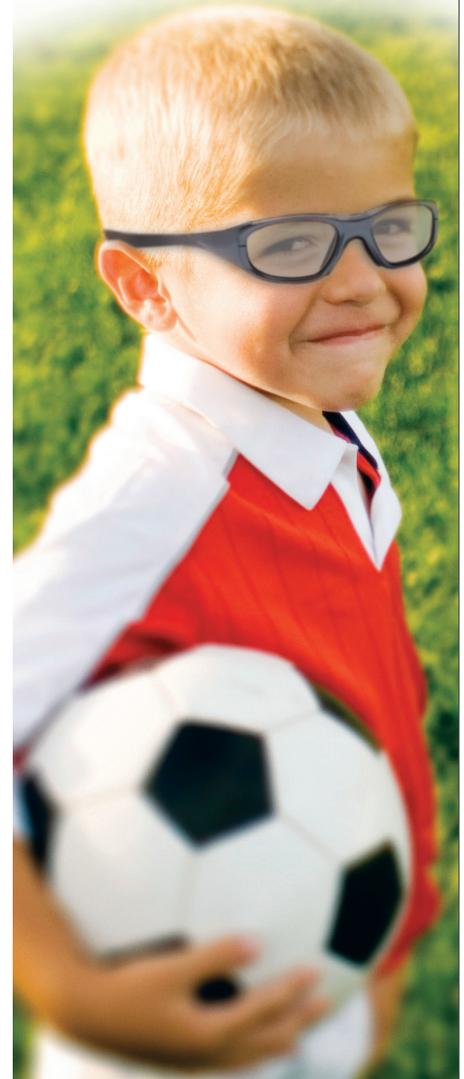
Athletes with an eye injury should be examined by an eye care provider to determine when the athlete should return to the sport.

Discussion:

Acute eye injuries can occur when athletes fail to wear eye protection or when athletes use goggles, glasses or face shields that are poorly-fitted or inappropriate for a particular sport. Some common injuries among athletes who do not wear approved protection include corneal abrasions, ocular inflammation, orbital fractures, swollen or detached retinas, traumatic cataract, and hyphema.

Glass and plastic lenses, open eye guards (those without lenses), and typical sunglasses designed for daily use will not adequately protect a child's eyes during sports. Lenses crafted from non-polycarbonate materials can shatter upon impact, increasing the severity of an eye injury and putting a child at risk for blindness.

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Children's Sports Eye Safety Position Statement—Continued

Sports safety eyewear must meet the standards set forth by the ASTM and ANSI. While many sports played without protective eyewear pose a threat to children's vision, eye injuries are most prevalent in basketball, water sports, gun-related activities, and baseball. Currently, the majority of children's athletic leagues and teams do not require children to wear sports eye protection.

Statistics

- 72 percent of sports related eye injuries occur in people younger than 25 years of age.ⁱⁱ
- Only 16.5 percent of children and adolescents aged 6 to 17 years used personal protective eyewear in recreational activities and hazardous situations around the home in 2008.ⁱⁱⁱ
- Using the right kind of eye protection while playing sports can help prevent serious eye injuries and even blindness. Ninety percent of eye injuries are preventable.^{iv}
- In 2013, there were more than 13,000 eye injuries sustained by children ages 14 years and younger. Basketball is the leading cause of eye injuries, followed by water/pool activities and use of guns (air, gas, spring, BB).^v
- According to the National Eye Institute, sports-related eye injuries cost \$175-200 million every year.^{vi}

Current Children's Sports Eye Safety Efforts

Objective V-6 of Healthy People 2020, established by the U.S. Department of Health and Human Services, calls for efforts to increase the use of appropriate safety eyewear in recreational activities.

The national governing board for women's lacrosse requires any athlete who participates in this sport at the youth, scholastic and collegiate level to wear protective eyewear to minimize the risk of catastrophic eye injury.^{vii}

The American Academy of Pediatrics (AAP), the American Academy of Ophthalmology (AAO), the American Optometric Association (AOA), the American Association for Pediatric Ophthalmology and Strabismus, and the American Public Health Association recommend protective eyewear for children participating in sports that pose risks for eye injury.

Approval:

This statement was approved by the Prevent Blindness Board of Directors on November 8, 2014.

Review Date:

The Children's Sport Eye Safety position statement will be reviewed again in November 2016.

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Common Eye Myths



It's important to separate fact from fiction, especially when the topic is eyesight. Knowing how to take good care of your eyes is the first step in protecting your sight. Don't be blind to the facts—below are 10 common myths about vision, along with the true facts.

Myth: Failure to use proper glasses will hurt your eyes.

Fact: This statement does have some truth in it for a small number of people. Some children have eye problems that can be corrected, and it is important that they wear their glasses. But vision problems caused by heredity or physical injury do not go away, even with glasses. While corrective glasses or contacts are needed to improve eyesight, using your eyes with or without glasses will not damage your vision further.

Myth: Reading in dim light can damage your eyes.

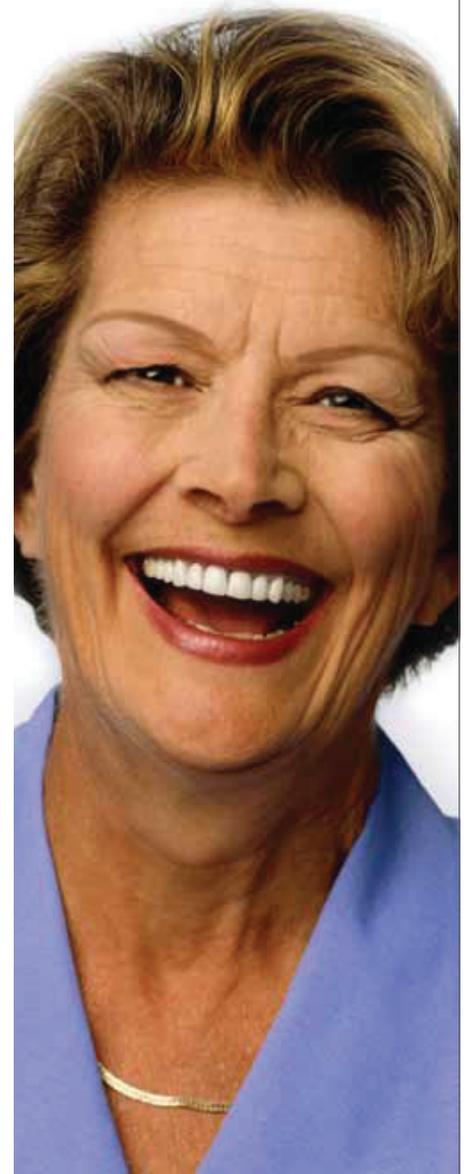
Fact: Reading in dim light can cause eye strain, but it will not hurt your eyes permanently.

Myth: Watching television for too long or sitting too close can damage your eyes.

Fact: There is no evidence to suggest that watching television for too long or sitting too close can damage your eyes. Young children often sit close to the television screen because they have a greater ability to focus on objects closer to their eyes than adults do. Due to this, children hold their reading material close as well. However, as they grow older, these habits usually change. If not, this may be a sign of myopia (nearsightedness). To detect possible eye problems, children should have regular eye exams.

Myth: Eating carrots will improve your vision.

Fact: While it is true that carrots, as well as many other vegetables are rich in vitamin A, which is an essential vitamin for sight, only a small amount is necessary for good vision. A well-balanced diet, with or without carrots, provides all the nutrients the body needs. In fact, too much vitamin A, D or E may actually be harmful.



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Common Eye Myths—Continued

Myth: Reading fine print for too long will wear out or damage your eyes.

Fact: This is one of the most widely held myths about vision. Some people are concerned that they should not read too much because it will wear out their eyes. Although extensive or prolonged reading of fine print can cause eye strain, there is no evidence to suggest that it will damage or wear out your eyes.

Myth: Wearing contacts prevents nearsightedness from getting worse.

Fact: Wearing contact lenses will not permanently correct nearsightedness. Myopia or nearsightedness is usually an inherited condition, and contact lenses can only be expected to improve vision. Contact lenses cannot prevent nearsightedness from getting worse.

Myth: Cataracts can be removed with a laser.

Fact: A cataract is a clouded lens of the eye—this procedure cannot be performed by a laser, only by surgery. However, after the surgery, the wrapping around the lens (called the casing) is left behind. This casing can become cloudy and cause blurry vision. The casing can then be opened with a laser, but the procedure should not be confused with the surgical removal of the clouded lens.

Myth: An eye examination is necessary only if you're having problems.

Fact: Everyone should follow proper eye healthcare, which includes regular eye exams, whether or not you are having any noticeable signs of problems. Children should be tested at birth, at 6 months of age, before entering school and periodically throughout the school years. For adults, the frequency depends on your doctor's advice and may be every two years or more often. If you have diabetes or an eye disease, you should go every year for a comprehensive eye exam.

Myth: There's nothing you can do to prevent vision loss.

Fact: More than 90% of eye injuries can be prevented, when simple and relatively inexpensive safety precautions are followed. That means choosing the correct eye safety glasses for the job and wearing them 100% of the time. Regular eye exams can help save your sight. Early detection of vision problems is crucial to preventing vision loss from many eye diseases—especially diabetic retinopathy and glaucoma.



Understanding Conjunctivitis



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What is conjunctivitis?

Conjunctivitis (or pink eye) is an inflammation of the conjunctiva, the clear mucous membrane that covers the white part of the eye and the inside of the eyelids. Conjunctivitis is the most common eye infection in the U.S. Cases may vary from a mild redness with watery eyes to serious infections where vision is impaired or even lost.

What causes conjunctivitis?

Conjunctivitis happens when the conjunctiva becomes infected, usually by a virus or bacteria. It can also be caused by allergic reactions or chemical irritations.

Signs/Symptoms of Conjunctivitis

Signs of conjunctivitis are red and irritated eyes. If you have conjunctivitis, you may wake up with your eyelashes stuck together from dried mucus formed during the night. The condition often affects both eyes and causes a gritty feeling in your eyes. Although vision is usually not affected, your eyes may be very sensitive to light. There is a stickiness of the eyelids, and in severe cases the eyelids are swollen. Itching is another common symptom.

Conjunctivitis can be confused with a more serious eye disease known as iritis. It is crucial to have your eye problem diagnosed and treated by an eye care professional.

How does conjunctivitis spread?

Anyone can get conjunctivitis since it can be very contagious. The germs that cause conjunctivitis spread easily throughout a household or classroom in a few days. Germs travel from one person's hands, towels or linens to the next person's. When that person touches his face or eyes, the infection can be transferred.

How to prevent conjunctivitis from spreading!

- > Avoid touching or rubbing the infected eye(s).
- > Wash your hands often with soap and water.
- > Use paper towels instead of cloth towels. If you must use cloth towels, don't share them.

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Understanding Conjunctivitis—Continued

- > Wipe any discharge from eyes at least twice a day or as your eye care professional directs.
- > Use facial tissues instead of handkerchiefs.
- > Wash any cloth towels, washcloths and linens that you have used in a hot water laundry cycle.
- > Do not use contact lenses or eye makeup until your eye is healed.
- > To avoid spreading conjunctivitis, keep children or adults home from school or work as directed by your eye care professional.

How is conjunctivitis treated?

Antibiotic eye drops, ointments or other medications may be prescribed. Cleaning the crusting on the eyelids every few hours with a cotton swab soaked in lukewarm water usually helps the eye feel better. Tinted glasses may relieve discomfort from bright light. Do not cover the eye with a patch, as this can make the infection worse.

Although many types of conjunctivitis may clear up on their own, it is best to have an examination by your eye care professional to determine the cause and right treatment.

Types of conjunctivitis

Viral: Viral conjunctivitis is very common. Sometimes it is linked with a low-grade upper respiratory condition that seems to be a common cold. Inflammation of the cornea often goes along with viral conjunctivitis.

Allergic: Pollen, cosmetics, chemicals in the air or dust can cause allergic conjunctivitis. It usually affects both eyes. Symptoms include extreme itching, mucousy discharge, moderate redness, tearing and sometimes nasal discharge and head congestion. Hay fever and upper respiratory infections often go along with allergic conjunctivitis. The skin and eyelids may become inflamed, swollen and itchy.

Bacterial: Bacterial conjunctivitis is very common and may start quickly or over a period of days. Symptoms can be mild or severe, depending on the type of bacteria involved and the general health and natural resistance of the infected person.

Chemical/toxic: Direct contact with noxious fumes, particles or chemical fluids may cause a red eye with tearing, pain and sensitivity to light. The severity depends on the type of chemical and the length of time the eye was exposed to it.

Always Remember...

Whatever irritation may occur, the eye is sensitive and must be treated with great care. When in doubt about any eye problem, call your eye care professional immediately.



Contact Lenses and the Risk for Infections



Contact lenses offer a convenient alternative to glasses or refractive surgery. There are two main classes of contact lenses: soft and rigid contact lenses. Soft lenses are most common. There are also different types of lenses, such as spherical, bifocal, or toric lenses. Lenses may be replaced daily or more often (weekly–monthly or annually). Some lenses can also be worn overnight, but this increases the risk of infection.

Contact lenses are medical devices. Only your eye doctor can prescribe the correct type of lens for you. Wearing contact lenses, especially soft contact lenses, can put you at higher risk for eye infections. When you receive your new lenses, it is very important that you ask your eye doctor how to care for and clean your contacts.

Two infections of growing concern are *Fusarium* keratitis and *Acanthamoeba* keratitis.

What is *Fusarium* keratitis?

Fusarium keratitis is an infection that can affect the cornea or front surface of the eye. The infection is caused by a fungus and can lead to corneal scarring or blindness. Therefore, the sooner treatment begins, the better. Keeping a routine schedule with your eye doctor and disposing of contacts when instructed, as well as maintaining proper lens hygiene, are very important steps toward preventing these infections.

What is *Acanthamoeba* keratitis?

Acanthamoeba keratitis is also an infection of the cornea that can cause corneal scarring and even blindness. The infection is believed to be caused through exposure of the eye to water contaminated with the amoeba *Acanthamoeba*, a free-living organism. Individuals who wear contact lens are believed to be at the highest risk for contracting the infection. *Acanthamoeba* keratitis is very rare, but can cause severe pain and be very harmful to the health of the eye.



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What steps can be taken to prevent *Acanthamoeba* keratitis?

- Remove contact lenses before swimming or using a hot tub, taking a shower or bath, or any other activity in which water can get in your eyes.
- If water comes into contact with your eyes while wearing contact lenses you may consider disposal of the lenses and begin using a new pair. However, your eye doctor may also be able to recommend a lens solution designed to kill organisms such as *Acanthamoeba* keratitis.

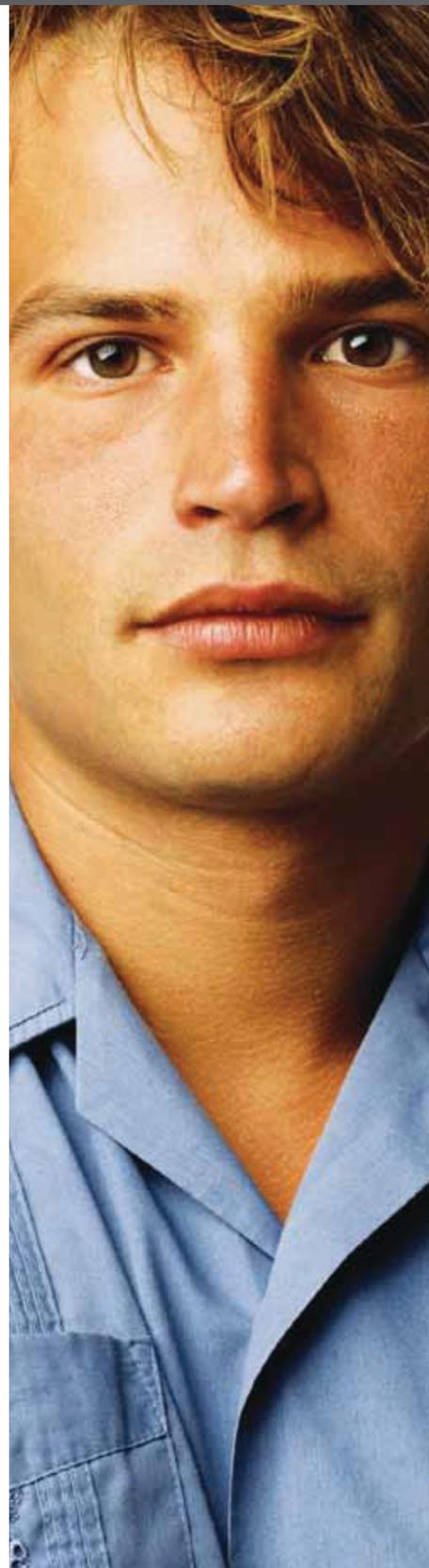
Signs and symptoms of a possible *Acanthamoeba* keratitis or *Fusarium* keratitis eye infection include:

- Blurry vision
- Pain in your eye
- Sensation of something in your eye
- Sensitivity to light (photosensitivity)
- Discharge

How are these infections treated?

Treatment is most successful if the infection is caught early. There are specific medicines that may heal the infection. If the infection does not respond to drugs, surgery may be the next step. If you suspect you have one of these infections, make an appointment with your eye doctor right away.

If you have consulted a doctor and the treatment for your eye infection is not working—be persistent. Make a return appointment for your eye doctor to explain what you are experiencing. Infections can react differently to treatment for each individual.



Prevent Blindness Position Statement: Cosmetic and Decorative Contact Lens



Position Statement

Prevent Blindness advises anyone purchasing cosmetic and decorative contact lenses (such as, Halloween contact lenses and color contact lenses) to visit an eye care professional to be fitted properly with a valid prescription (It is illegal to sell or purchase contact lenses to a consumer without a valid contact lens prescription). Not doing so may lead to a potentially sight threatening eye problem.

Discussion:

There are increasing reports of the dispensing of cosmetic contact lenses, without an appropriate prescription, by non-eye-care professionals accessed through the internet, boutiques, beach shops, tattoo parlors and other nonprofessional commercial vendors. As of November 9, 2006, the FDA updated its policy to classify all contact lenses – including decorative, non-corrective contact lenses only intended to change the normal appearance of the eye – as medical devices.ⁱ

Contact lenses not secured through a licensed eye care professional can lead to health complications. Problems such as eye pain, bacterial infections and corneal ulcers with loss of vision are caused by improper use of lenses or solutions, sharing of lenses, or patients trying to take shortcuts such as using lenses for a longer time than prescribed or not using adequate cleaning and soaking solutions.

At a minimum, a comprehensive examination for a contact lens prescription includes a measurement of the refractive error, an evaluation of the shape and integrity of the cornea and the associated structures as well as the quality of the tear film. Successfully fitted contact lenses have three characteristics: 1) comfortable wear, 2) clear vision, and 3) no damage to the eye. It is easy for patients to evaluate comfort and quality of vision; however, only an eye care provider can evaluate the health of the eye. For further information about contact lens wear, visit <http://preventblindness.org/wearing-contact-lenses>.

Approval:

This statement was approved by the Prevent Blindness Board of Directors on November 8, 2014.

Review Date:

The cosmetic contact lens statement will be reviewed again in November 2016.

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ⁱ FDA. Medical Devices: Decorative, Non-corrective Contact Lenses. 2011. Accessed on October 9, 2013 at <http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm071572.htm>.

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Facts About Toy Injuries



Prevent Blindness wants everyone to know about the potential hazards some toys may have. In fact, the U.S. Consumer Product Safety Commission (CPSC) reports that there were an estimated 262,300 toy-related injuries treated in U.S. hospital emergency departments in 2011. The CPSC also reported the following statistics:

- > 44 percent of the estimated emergency department-treated injuries are classified as lacerations, contusions, or abrasions.
- > Forty-five percent of the estimated injuries were to the head and face area, the most commonly affected area of the body.
- > Males accounted for 154,800 (59 percent) of the estimated toy-related injuries in 2011.
- > Of the 262,300 estimated toy-related, emergency department treated injuries, an estimated 193,200 (74 percent) happened to children younger than 15 years of age; an estimated 184,100 (70 percent) occurred to children 12 years of age or younger; while an estimated 92,200 (35 percent) happened to children younger than 5 years of age.

Prevent Blindness strongly recommends:

- > Read all warnings and instructions on toys.
- > Avoid toys with sharp or rigid points, shafts, spikes, rods, and dangerous edges.
- > Keep toys intended for older children away from younger children.
- > Avoid flying toys and projectile-firing toys; these pose a danger to all children, particularly those under five years old.
- > Be aware of items in playgrounds and play areas that pose potential eye hazards.



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Source: Tu, Yongling, 2012, Toy-Related Deaths and Injuries, Calendar Year 2011, U.S. Consumer Product Safety Commission, Nov. 2012, (<http://www.cpsc.gov/PageFiles/133613/toymemo11.pdf>)

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Eye Patch Choices

Selecting the right eye patch for your child with lazy eye (amblyopia) can help ensure the success of treatment. However, it is most important that you consult your child's eye doctor in making this selection since every patch may not be right for every child and some patches may not be right for treating amblyopia.

ADHESIVE PATCHES

There are at least two brands of adhesive eye patches commonly available over-the-counter in drug stores and other retail establishments:

Coverlet® Eye Occluder

Beiersdorf Inc.
Wilton, Connecticut 06897

Krafty Eye Patches™

SavCo Optical Inc.
9030 Kenamar Rd #316
San Diego, Ca 92130
Phone: 858.537.0947
sales@kraftyeyepatches.com
www.KraftyEyePatches.com

Nexcare™ Opticlude™ Orthoptic Eye Patch

3M Health Care
3M Center, Building 275-5W-05
St. Paul, Minnesota 55144
Phone: 800.537.2191

Ortopad Hypo-Allergenic Eye Patches

Eye Care and Cure
4646 South Overland Boulevard
Tuscon, Arizona 85714

Sight Connection

9709 Third Avenue, NE, #100
Seattle, Washington 98115-2027
www.sightconnection.com

NON-ADHESIVE PATCHES

Several alternatives to adhesive patches are available. Many of these are made by small businesses, some of which were started by parents of children with amblyopia. Some are cloth patches for wearing over the eye, while others are eyeglass lens occluders.

Anissa's Fun Patches

P.O. Box 455
Chuckey, Tennessee 37641
423.234.3404
www.anissasfunpatches.com

Eye Patch Heaven

P.O. Box 21317
Bakersfield, California 93390
www.eyepatchheaven.com



healthy eyes for healthy futures

StarPupils.org

*Star Pupils is a trademark program
of Prevent Blindness America*



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Eye Patch Choices—Continued

Framehuggers

2110 McPherson Street
North Bend, Oregon 97459
www.framehuggers.com

iPatch

190 West Grayling Drive
Fairlawn, Ohio 44333
www.goipatch.com

Little Patches

Joanne Kelley
5 Jackson Court
Newport, Rhode Island 02840
Phone: 401.845.9282

Munchkins Eye Patches

3030 Oceanside Boulevard, #12
Oceanside, California 92054
http://stores.shop.ebay.com/Munchkins-eye-Patches_W00Q_armrsZ1

Optisource

40 Saw Grass Drive
Bellport, New York 11713
www.1-800-optisource.com

PatchPals

P.O. Box 26
Hiawatha, Iowa 52233
Phone: 319.393.4657
www.patchpals.com

PatchWorks

7655 Scribner Drive
Citrus Heights, California 95610
Phone: 916.726.9649
E-mail: getapatch@aol.com

Pumpkin Patch Eyeworks

P.O. Box 9261
Peoria, Illinois 61614
www.lazyeyepatches.com

The Eyes Have It

SoJac Enterprises

P.O. Box 607
Carlisle, Pennsylvania 17013
Phone: 717.960.9091
E-mail: sojacenterprises@aol.com

Prevent Blindness America does not endorse or promote specific products and cannot comment on the appropriateness of these patches for any given use. This list is provided for informational purposes only and is not comprehensive. Please consult your eye doctor before selecting or changing your child's eye patch.

Call the PBA Vision Health Resource Center at 800.331.2020 for more information about The Eye Patch Club®, a fun program for families dealing with a child's amblyopia treatment.



Financial Assistance Information



Association of Schools and Colleges of Optometry

6110 Executive Boulevard, Suite 510
Rockville, Maryland 20852
Phone: (301) 231-5944
Fax: (301) 770-1828
www.opted.org

Many optometry schools offer low-cost care to people willing to be treated by supervised students. They may also provide free care to people who join research studies.

Chronic Disease Fund

6900 N. Dallas Parkway, Suite 200
Plano, TX 75024
Toll-free Patient Info: (877) 968-7233
Main: (972) 608-7141
www.cdfund.org

Chronic Disease Fund® is an independent 501(c)(3) non-profit charitable organization helping patients with chronic disease, cancers or life-altering conditions obtain the expensive medications they need.

Elected Official

Check with your state elected official.

EyeCare America®

The Foundation of the American Academy of Ophthalmology
P.O. Box 429098
San Francisco, CA 94142-9098
Phone: (877) 887-6327

Fax: (415) 561-8567
www.eyecareamerica.org

EyeCare America provides eye care to US citizens and legal residents through volunteer ophthalmologists (Eye M.D.s) at no cost to those who qualify. Go to the website or call to find out if you qualify for eye care. EyeCare America facilitates eye care for U.S. citizens or legal residents who are without an Eye M.D. and who do not belong to an HMO or do not have eye care coverage through the Veterans Administration.

- **Those who are age 65 or older and who have not seen an EyeMD in three or more years may be eligible to receive a comprehensive, medical eye exam and up to one year of care at no out-of-pocket cost for any disease diagnosed during the initial exam.** Volunteer ophthalmologists will waive co-payments, accepting Medicare and /or other insurance reimbursement as payment in full: patients without insurance receive this care at no charge.
- **Those who are determined to be at increased risk for glaucoma (by age, race and family history) and have not had an eye exam in 12 months or more may be eligible to receive a free glaucoma eye exam if they are uninsured.** Those with insurance will be billed for the exam and are responsible for any co-payments. The initiation of treatment is provided, if deemed necessary by the doctor during the exam.

211 West Wacker Drive
Suite 1700
Chicago, Illinois 60606
800.331.2020
PreventBlindness.org



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Financial Assistance Information—Continued

The HealthWell Foundation

P.O. Box 4133
Gaithersburg, MD 20878
Phone: (800) 675-8416
Fax: (800) 282-7692

www.healthwellfoundation.org

The HealthWell Foundation provides financial assistance to eligible individuals to cover co-insurance, co-payments, healthcare premiums and deductibles for certain treatments.

Health Department

Call your local office.

The Hill Burton Program

Health Resources and
Services Administration
5600 Fishers Lane, Room 10C-16
Rockville, Maryland 20857
Phone: (800) 492-0359 (Maryland
residents)
(800) 638-0742

[http://www.hrsa.gov/
gethealthcare/affordable/
hillburton/](http://www.hrsa.gov/gethealthcare/affordable/hillburton/)

Participating hospitals and other healthcare facilities provide medical care for free, or at reduced cost, to those who meet eligibility requirements based on family size and income. Procedures covered vary from hospital to hospital. A list of assisting sites available in your state is located online.

InfantSEE

Optometry Cares
The Foundation of the American
Optometric Association
243 N. Lindbergh Blvd., Floor 1
St. Louis, MO 63141
Phone: (888) 396-EYES (3937)

www.infantsee.org

InfantSEE optometrists provide a no-cost comprehensive eye and vision assessment for infants within the first year of life regardless of a family's income or access to insurance coverage.

Lions Clubs International

300 22nd Street
Oak Brook, Illinois 60523
Phone: (630) 571-5466
(800) 747-4448

www.lionsclubs.org

Provides financial assistance to individuals for eye care through local clubs. On their website, go to "Find a Club" to locate your local club.

Lucentis® Access Solutions

Phone: (866) 724-9394 or
(866) 422-2377
Fax: (866) 724-9412
accessolutionsluc-d@gene.com
[www.genentech-access.com/
lucentis/patients](http://www.genentech-access.com/lucentis/patients)

Assists patients who are concerned about access to Lucentis (a drug treatment for AMD developed by Genentech) and assists them with health insurance coverage and reimbursement issues.

Medicaid

Centers for Medicare &
Medicaid Services
7500 Security Boulevard,
Baltimore, MD 21244
www.medicaid.gov

Information and assistance can be found at the Medicare.gov website and the individual state Medicaid websites (see our "Medicaid by State" page). Generally, the best place to start is the Medicaid office of your particular state — most of the numbers listed here are for program issues and general questions and information.

Medicare

Centers for Medicare &
Medicaid Services
7500 Security Boulevard,
Baltimore, MD 21244
Phone: (800) MEDICARE (633-4227)
www.medicare.gov

Medicare beneficiaries, family members, and caregivers can visit www.Medicare.gov, the Official U.S. Government Site for People with Medicare, for the latest information on Medicare enrollment, benefits, and other helpful tools.

Financial Assistance Information—Continued

Mission Cataract USA

6716 N. Cedar Avenue
Suite 212
Fresno, California 93710
Phone: (800) 343-7265*

www.missioncataractusa.org

** Please note – you will receive a voice message when you call this number. Leave your contact info and someone will return your call. You can also visit their website for more information. Coordinated by the Volunteer Eye Surgeon's Association, it is a program providing free cataract surgery to people of all ages who have no other means to pay. Surgeries are scheduled annually on one day, usually in May.*

National Council on Patient Information and Education

4915 Saint Elmo Avenue
Suite 505
Bethesda, Maryland 20814
Phone: (301) 340-3940
Fax: (301) 656-4464

www.talkaboutrx.org/med_users.jsp

They provide free information on their website regarding the safe use of medicines.

National Federation of the Blind

200 East Wells Street at
Jernigan Place
Baltimore, Maryland 21230
Phone: (410) 659-9314

www.nfb.org

They work to improve social and economic conditions of blind persons by providing evaluations of present programs and assistance in establishing new ones; awards scholarships to blind persons; has a public education program including speakers' bureau; and has several special interest divisions, including those for diabetics, educators, lawyers, parents of blind children, students and public employees. The National Federation of the Blind has affiliates in all fifty states plus Washington D.C. and Puerto Rico, and over seven hundred local chapters.

NeedyMeds

Post Office Box 219
Gloucester, MA 01930
Phone: (978) 865-4115
Fax: (206) 260-8850

www.needymeds.com

They provide information obtained directly from the drug manufacturers regarding special programs to assist people who can't afford to buy the drugs they need.

New Eyes for the Needy

549 Millburn Avenue
Post Office Box 332
Short Hills, NJ 07078
Phone: (973) 376-4903
Fax: (973) 376-3807

www.neweyesforthe needy.org

They accept donations of used prescription eyeglasses and distribute them to persons with limited incomes. Recipients must have a letter of referral from a social services agency.

Partnership for Prescription Assistance

1100 15th Street, Northwest
Washington, DC 20005
Phone: (888) 477-2669
Fax: (202) 835-3414

www.pparx.org

This website is designed to help people find patient assistance programs for which they may qualify.

Patient Access Network Foundation

PO Box 221858
Charlotte, NC 28222
Phone: (866) 316-PANF (7263)
contact@patientaccessnetwork.org
www.panfoundation.org

Founded in October 2004 as a solution to help the underinsured access the health care they so desperately need to continue living a relatively normal and productive lifestyle.

Financial Assistance Information—Continued

Public Aid

Check with your state, county, or city office.

Qualified Medicare Beneficiary (QMB)

Contact your local Medicare office for information on qualifying.

Salvation Army

Contact your local office.

Senior Centers

Contact your local center to see if they have financial resource information in your area.

Sight for Students, a Vision Service Plan (VSP)

Phone: (888) 290-4964

www.sightforstudents.org

Contact your local Prevent Blindness America affiliate for more details. This program is in partnership with The Entertainment Industry Foundation, and provides eye exams and glasses to children 18 years old and younger whose families cannot afford vision care.

Social Security Administration (SSA)

Call your local Social Security Administration office for information on qualifying.

Social Workers

Contact a social worker at a hospital or other community agency. Social workers are often knowledgeable about community resources that can help people facing financial and medical problems.

Specified Low Income Medicare Beneficiary (SLMB)

Call your local Medicare office for information.

United Way

Check with your local office.

VISION USA

Optometry Cares
The Foundation of the American
Optometric Association
243 N. Lindbergh Blvd., Floor 1
St. Louis, MO 63141
Phone: (800) 766-4466

www.aoa.org/visionusa

VISION USA, an Optometry Cares program, provides free eye exams to low-income Americans across the U.S. Patients cannot have had an eye examination in the past 24 months. Applications may be obtained on the AOA website, along with more information. You must work with a charitable organization, social worker, case worker, community health agency to submit an application. Applicants are to provide proof of household income for verification of income level eligibility.

Información de Asistencia Financiera



Association of Schools and Colleges of Optometry

(Asociación de Escuelas y Facultades de Optometría)

6110 Executive Boulevard
Suite 510
Rockville, Maryland 20852
Teléfono: (301) 231-5944
Fax: (301) 770-1828

www.opted.org

Muchas escuelas de optometría ofrecen cuidado a un costo bajo a las personas que deseen ser tratado por estudiantes supervisados. Ellos también pueden proporcionar atención gratuita a las personas que se unen a los estudios de investigación.

Chronic Disease Fund

(Fondo de Enfermedades Crónicas)

6900 N. Dallas Parkway,
Suite 200
Plano, TX 75024
Información del Paciente Número gratuito: (877) 968-7233
Principal: (972) 608-7141

www.cdfund.org

Chronic Disease Fund® es una organización independiente 501 (c) (3) sin fines de lucro de caridad para ayudar a los pacientes con enfermedad crónica, cánceres o afecciones que alteran la vida obtener los medicamentos caros que necesitan.

Oficial Electo

Consulte con su estado funcionario electo.

EyeCare America®

La Fundación de la Academia de Oftalmología en los EE.UU.

P.O. Recuadro 429098
San Francisco, CA 94142-9098
Teléfono: (877) 887-6327
Fax: (415) 561-8567

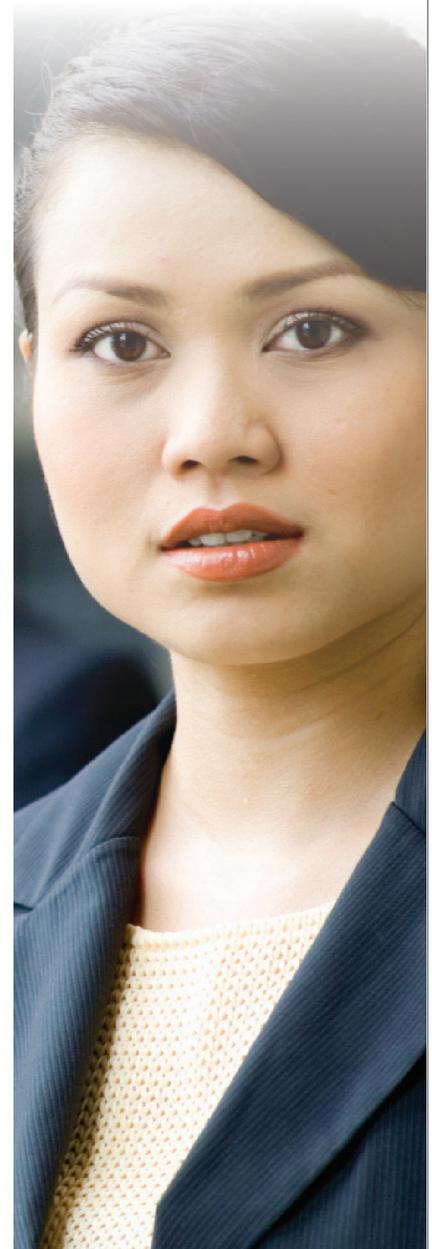
www.eyecareamerica.org

EyeCare America ofrece atención oftalmológica a los ciudadanos estadounidenses y residentes legales a través de oftalmólogos voluntarios sin costo para aquellos que califiquen. Visite al sitio o llame para averiguar si califica para cuidado ocular. EyeCare America facilita el cuidado ocular de los ciudadanos de EE.UU. o residentes legales que no tienen un oftalmólogo y que no pertenecen a un HMO o no tienen cobertura de cuidado ocular a través de la Administración de Veteranos.

• Los que tienen 65 años o más y que no han visto un EyeMD en tres o más años pueden ser elegibles para recibir un examen comprensivo de la vista y hasta un año de cuidado sin ningún costo para cualquier enfermedad diagnosticada durante el examen inicial. Oftalmólogos voluntarios renunciarán copagos, aceptando Medicare y / u otro seguro reembolso como pago total: los pacientes que no tienen seguro reciben esta atención sin costo alguno.

• Los que están resueltos a ser un mayor riesgo de glaucoma (por la edad, la raza y los antecedentes familiares) y no han tenido un

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Chicago, Illinois 60606
800.331.2020
PreventBlindness.org



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examen ocular en 12 meses o más pueden ser elegibles para recibir un examen de glaucoma libre si no tienen seguro. Aquellos con seguro serán facturados por el examen y son responsables de cualquier copago. El inicio de la el tratamiento se proporciona, si se considera necesario por el médico durante el examen.

The HealthWell Foundation

(La Fundación de Bien Salud)

P.O. Caja de 4133
Gaithersburg, MD 20878
Teléfono: (800) 675-8416
Fax: (800) 282-7692

www.healthwellfoundation.org

The HealthWell Foundation ofrece asistencia financiera a los individuos elegibles para cubrir co-seguros, copagos, primas de atención médica y deducible para ciertos tratamientos.

Departamento de Salud

Llame a su oficina local.

The Hill Burton Program

(El Programa de Hill Burton)

Recursos de Salud y
Administración de Servicios
5600 Fishers Lane, Room 10C-16
Rockville, Maryland 20857
Teléfono: (800) 492-0359
(residentes de MD)
(800) 638-0742

<http://www.hrsa.gov/gethealthcare/económico/hillburton/>

Los hospitales participantes y otras instalaciones de asistencia sanitaria proporcionen atención médica gratuita, o al menor costo, para aquellos que cumplen con la elegibilidad requisitos en

función del tamaño de la familia y los ingresos. Procedimientos cubiertos varían de un hospital a otro. Una lista de los ayudar a los sitios disponibles en su estado se encuentra en línea.

InfantSEE

Cuidados Optometría
La Fundación de la American
Asociación de Optometría
243 N. Lindbergh Blvd., Piso 1
St. Louis, MO 63141
Teléfono: (888) 396-EYES (3937)

www.infantsee.org

Optometristas de InfantSEE proporcionan un examen ocular completo sin costo y evaluación de la visión para los niños dentro el primer año de vida, independientemente de los ingresos de una familia o de acceso a la cobertura de seguro.

Lion's Clubs International

300 22nd Street
Oak Brook, Illinois 60523
Teléfono: (630) 571-5466
(800) 747-4448

www.lionsclubs.org

Proporciona asistencia financiera a personas para el cuidado ocular a través de los clubes locales. En su sitio, vaya a "Buscar un Club" para localizar su club local.

Lucentis® Access Solutions

Teléfono: (866) 724-9394 o
(866) 422-2377
Fax: (866) 724-9412
accessolutionsluc-d@gene.com

www.genentech-access.com/Lucenti/pacientes

Ayuda a los pacientes que están preocupados por

el acceso a Lucentis (un tratamiento farmacológico para la degeneración macular desarrollado por Genentech) y los ayuda con la cobertura de la salud de seguro y problemas de reembolso.

Medicaid

Centers for Medicare &
Medicaid Services
7500 Security Boulevard,
Baltimore, MD 21244

www.medicaid.gov

Información y asistencia pueden ser que se encuentra en el sitio Medicare.gov y sitios individuales de estado (ver nuestro "Medicaid por Página Estado"). Generalmente, la mejor lugar para comenzar es la oficina de Medicaid de su estado particular - más de los números que aparecen aquí son para las cuestiones de programa y preguntas generales e información.

Medicare

Centers for Medicare &
Medicaid Services
7500 Security Boulevard,
Baltimore, MD 21244
Teléfono: (800) MEDICARE (633-4227)
www.medicare.gov

Los beneficiarios de Medicare, familia miembros, y los cuidadores pueden visitar Medicare.gov, los EE.UU. Oficial Sitio del Gobierno para las Personas con Medicare, la información más reciente sobre inscripción de Medicare, beneficios, y otras herramientas útiles.

Mission Cataract USA

Misión Catarata EE.UU.
6716 N. Cedar Avenue
Suite 212
Fresno, California 93710
Teléfono: (800) 343-7265 *

www.missioncataractusa.org

** Tenga en cuenta - usted recibirá un mensaje de voz cuando se llama a este número. Deje su información de contacto y alguien le devolverá la llamada. También puede visitar su página web para más información. Coordinado por la Asociación de Cirujanos Voluntarios, es un programa de proporcionando cirugía gratuita de cataratas a las personas de todas las edades que no tienen otros medios para pagar. Las cirugías son programadas anualmente en un día, por lo general en mayo.*

National Council on Patient Information and Education

Consejo Nacional de Pacientes
Información y Educación
4915 Saint Elmo Avenida
Suite 505
Bethesda, Maryland 20814
Teléfono: (301) 340-3940
Fax: (301) 656-4464

www.talkaboutrx.org/med_users.jsp

Proporciona información gratuita sobre su página sobre el uso seguro de medicamentos.

National Federation of the Blind

Federación Nacional de los Ciegos
200 de la calle Wells Oriente en Jernigan Place
Baltimore, Maryland 21230
Teléfono: (410) 659-9314

www.nfb.org

Ellos trabajan para mejorar las condiciones sociales y condiciones económicas de las personas ciegas por proporcionar evaluaciones de programas y asistencia actuales en el establecimiento de otros nuevos; premios becas a las personas ciegas; tiene un programa de educación pública que incluye oficina de oradores; y tiene varias divisiones de intereses especiales, incluyendo aquellos para los diabéticos, los educadores, los abogados, los padres de niños ciegos, los estudiantes y los empleados públicos. La Federación Nacional de los Ciegos tiene filiales en todos los cincuenta estados más Washington DC y Puerto Rico, y más de setecientos capítulos locales.

NeedyMeds

Post Office Box 219
Gloucester, MA 01930
Teléfono: (978) 865-4115
Fax: (206) 260-8850

www.needymeds.com

Proporciona información obtenido directamente de los fabricantes de drogas sobre programas especiales para ayudar a las personas que no pueden comprar los medicamentos que necesitan.

New Eyes for the Needy

549 Millburn Avenida
Post Office Box 332
Short Hills, NJ 07078
Teléfono: (973) 376-4903
Fax: (973) 376-3807

www.neweyesfortheneedy.org

Aceptan donaciones de anteojos recetados utilizados y distribuirlos a las personas con ingresos limitados. Los beneficiarios deben tener una carta de referencia de una agencia de servicios sociales.

Partnership for Prescription Assistance

1100 15th Street, Northwest
Washington, DC 20005
Teléfono: (888) 477-2669
Fax: (202) 835-3414

www.pparx.org

Este sitio ha sido diseñado para ayudar a personas para que encuentren programas para asistencia de los pacientes, de los cuales pueden calificar.

Patient Access Network Foundation

PO Box 221858
Charlotte, NC 28222
Teléfono: (866) 316-PANF (7263)

contact@patientaccessnetwork.org

www.panfoundation.org

La Fundación opera los programas de asistencia de copago para los pacientes con Macular Relacionada con la Edad Degeneración, edema macular diabético, oclusión venosa retiniana y uveítis. Para calificar, los pacientes deben ser asegurados y el seguro debe cubrir el medicamento para el cual

el paciente busca ayuda, deben residir y recibir tratamiento en los Estados Unidos, y debe tener un ingreso familiar por debajo de 500% (\$ 78.650 para una familia de dos) de la Nivel de pobreza federal (por debajo de 400% / 58.350 dólares para la uveítis). Los pacientes que califiquen pueden recibir \$ 4,000 / año para Macular Relacionada con la Edad Degeneración y Edema Macular Diabético; \$ 5,000 / año para la oclusión venosa retiniana; y \$ 1,500 / año para la uveítis.

Ayuda Pública

Consulte con su estado, condado, o en la oficina de la ciudad.

Beneficiario de Medicare Calificado (QMB)

Póngase en contacto con su oficina local de Medicare para obtener información sobre clasificación.

Ejército de Salvación

Póngase en contacto con su oficina local.

Centros de Mayores

Póngase en contacto con su centro local para ver si tienen los recursos financieros información en su área.

Visión para estudiantes, una Vision Service Plan (VSP)

Teléfono: (888) 290-4964

www.sightforstudents.org

Póngase en contacto con la oficina local de Prevent Blindness America afiliado para más detalles. Este programa está en asociación con The Entertainment Industry Foundation, y proporciona exámenes oculares y gafas a niños de 18 años y jóvenes cuyas familias no pueden pagar el cuidado de la visión.

Social Security Administration (SSA)

Llame a su oficina local del Seguro Social de la para información sobre la calificación.

Trabajadores Sociales

Póngase en contacto con un trabajador social en un hospital u otra agencia comunitaria. Los trabajadores sociales están bien informados sobre recursos de la comunidad que puede ayudar a las personas que afrontan problemas financieros y médicos.

Specified Low Income Medicare Beneficiaries (SLMB)

Llame a su oficina local de Medicare para obtener información.

United Way

Consulte con su oficina local.

VISION USA

VISIÓN EE.UU.

Cuidados Optometría
La Fundación de la American
Asociación de Optometría
243 N. Lindbergh Blvd., Piso 1
St. Louis, MO 63141
Teléfono: (800) 766-4466

www.aoa.org/visionusa

VISIÓN EE.UU., un programa, ofrece exámenes oculares gratis a los estadounidenses de ingresos bajos a través de los Estados Unidos. Los pacientes no pueden haber tenido un examen ocular en el pasado 24 meses. Las aplicaciones pueden ser obtenidas en el sitio de AOA, junto con más información. Usted debe trabajar con una organización caridad, trabajador social, asistente social, la agencia de salud comunitaria para presentar una solicitud. Los solicitantes deben presentar prueba de ingreso de los hogares para la verificación de elegibilidad de nivel de ingresos.

Finding an Eye Care Professional



You may have recently had your vision screened and failed the screening, you may have noticed changes in your vision, or you may be at risk for developing glaucoma or diabetic retinopathy. Even if you are not experiencing vision problems, it is important to get regular eye exams. If you are thinking about seeing an eye care professional, but don't know where to begin, this fact sheet can help.

Referrals are often helpful in choosing an eye care professional. Ask trusted friends or contact a hospital or university with a medical school for names and references. You can also call one of the following organizations for a referral to someone in your area. The following are the definitions given by each professional organization with their contact information.

Ophthalmologists

Definition provided by the American Academy of Ophthalmology. For more information, contact the AAO at (415) 561-8540 or www.aao.org.

A physician (doctor of medicine or doctor of osteopathy) who specializes in the refractive, medical and surgical care of the eyes and visual system and in the prevention of eye disease and injury. The ophthalmologist has completed four or more years of college premedical education, four or more years of medical school, and four or more years of residency, including at least three years of residency in ophthalmology. The ophthalmologist is a specialist who is qualified by lengthy medical education, training, and experience to diagnose, treat, and manage all eye and visual system problems and is licensed by a state regulatory board to practice medicine and surgery. The ophthalmologist is the medically trained specialist who can deliver total eye care: primary, secondary, and tertiary care services (i.e., vision services, spectacle and contact lens prescriptions, eye examinations, medical eye care, and surgical eye care), diagnose general diseases of the body and treat ocular manifestations of systemic diseases.

Optometrists

Definition provided by the American Optometric Association. For more information, contact the AOA at (314) 991-4100 or www.aonet.org.

Doctors of optometry (optometrists) are independent primary health care providers who specialize in the examination, diagnosis, treatment and management of diseases and disorders of the visual system, the eye and associated structures, as well as the diagnosis of related systemic



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Finding an Eye Care Professional—Continued

conditions. The optometrist has completed pre-professional education at a college or university, four years at a college of optometry and, in some cases, a residency. Doctors of optometry are specifically trained and state licensed to provide primary eye care services. These services include comprehensive eye health and vision examinations; diagnosis and treatment of eye diseases and vision disorders; the prescribing of glasses, contact lenses, low vision rehabilitation, vision therapy, drugs and medications and the counseling of patients regarding their vision needs as related to their occupation, avocations and lifestyles.

Glaucoma Specialists

The mission of the American Glaucoma Society is to promote excellence in the care of patients with glaucoma and preserve or enhance vision by supporting glaucoma specialists and scientists through the advancement of education and research. For a specialist in your state, visit www.glaucomaweb.org or call (415) 561-8587. If you are 55 or older, you should get a dilated eye exam at least once every two years—more often if you have other health problems. Adults and children who have diabetes should have a dilated eye exam at least once a year.

At a complete eye exam, called a dilated eye exam, the eye doctor widens the pupil of the eye with eye drops to allow a closer look at the inside of the eye. This exam may not be part of an eye exam for a new pair of eyeglasses or contact lenses. Be sure to ask your eye doctor for a dilated eye exam.

Pediatric Ophthalmologists and Adult Strabismus

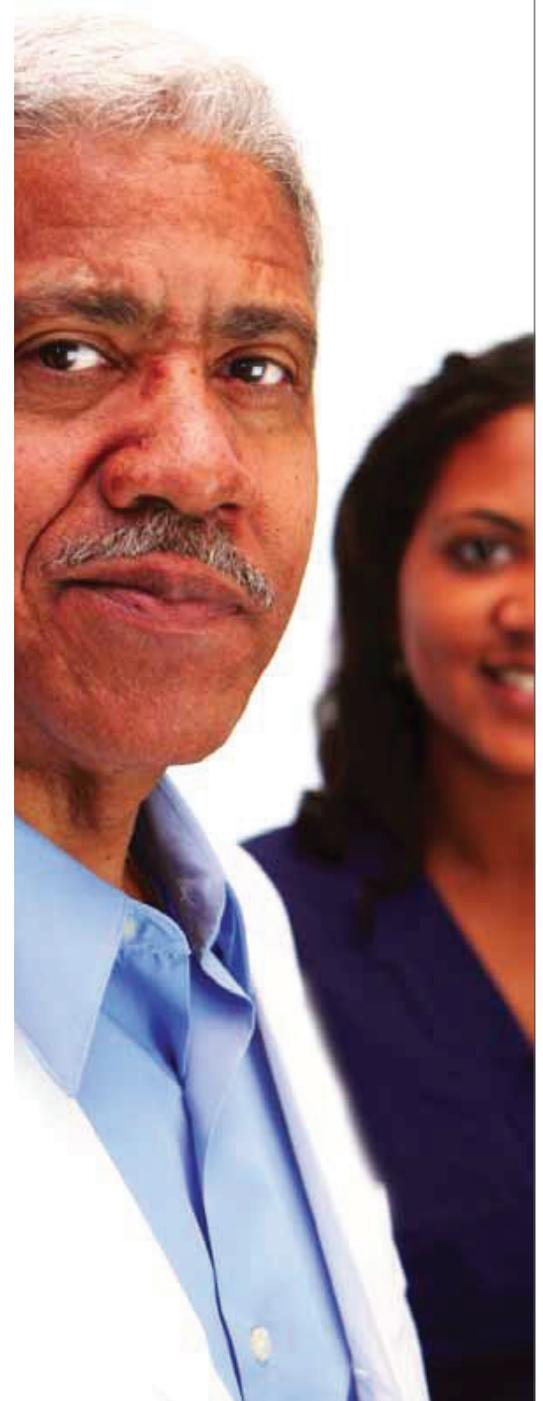
Physicians that have had advanced specialty training in the areas of children's eye care and adult strabismus can be located by contacting the American Association for Pediatric Ophthalmology and Strabismus at (415) 561-8505 or at www.aapos.org

When you call to make an appointment

- > Be ready to describe any problems you may have with your vision.
- > The eye exam can affect your vision for up to a few hours. Ask if you will be able to drive home yourself.
- > Ask how much the exam will cost. Do any of your health insurance plans pay for some or all of the cost? How is payment handled?

During the exam

- > Ask about anything you don't understand.
- > Ask what the best time is to call the doctor with questions.
- > Find out when you should return for your next appointment.



Facts About Fireworks Injuries



Prevent Blindness America wants all Americans to know the dangers of consumer fireworks. The U.S. Consumer Product Safety Commission reports the following fireworks injury statistics:

Prevent Blindness America
211 West Wacker Drive
Chicago, IL 60606

800.331.2020

- > Fireworks devices were involved in an estimated 9,600 injuries treated in U.S. hospital emergency rooms in 2011 (the latest year for which data is available).
- > An estimated 6,200 injuries were treated in hospital emergency rooms during the one-month period (June 17-July 17) surrounding the Fourth of July.
- > Eyes were the second most commonly injured part of the body, with an estimated 1,100 fireworks-related eye injuries treated in the same one-month period of 2011.
- > Sparklers accounted for 1,100 injuries, firecrackers (800) and reloadable shells (900).
- > Males accounted for 68% of fireworks injuries.
- > There were 200 eye injuries from viewing public fireworks displays.
- > 26% of fireworks injuries were to children under age 15.
- > Data from the U.S. Eye Injury Registry shows that bystanders are more often injured by fireworks than operators themselves.
- > Contusions, lacerations and foreign bodies were the most common injuries to eyes.
- > There were 4 fireworks-related deaths in 2011.



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Facts About Fireworks Injuries—Continued

Keep These Fireworks-Related Injuries in Mind

- > A 16-year-old male's brother stacked multiple-tube devices on top of each other and ignited them. The tubes fell over and started shooting in all directions. A firework exploded and went into his right eye. As a result, the victim suffered a corneal abrasion and hyphema.
- > A 31-year-old male set off aerial shells at a beach. He placed a mortar into a tube and buried the tube a few inches in sand. When he lit the mortar, the tube blew apart and caused the mortar to go sideways. The firework hit the victim in his right eye. The victim suffered bleeding in his right eye, and the iris was torn apart.
- > A 34-year-old male dismantled a cake device (mortar) and one of the tubes went off more quickly than he expected and exploded in his face. As a result, the victim suffered broken bones between his nose and eye socket. The victim now requires prescription glasses for his right eye due to permanent vision loss.
- > A 54-year-old female was in a public park watching a city's fireworks display across a river. The ashes/debris from the fireworks went into her eye. Her eye was irritated, and she got a hematoma in the eye.

Our Position: Protect Your Sight by Celebrating Safely

Prevent Blindness America urges you to celebrate safely. Fireworks are extremely dangerous. Do not purchase, use or store fireworks of any type. Protect yourself, your family and your friends by avoiding fireworks. Attend only authorized public fireworks displays conducted by licensed operators, but be aware that even professional displays can be dangerous.

Call our toll-free hotline at **800.331.2020** to receive Safe Summer Celebrations. The booklet discusses the dangers of fireworks and offers safe alternatives. You can also request a copy of our *Fireworks Eye Injury Safety Quiz*.

Prevent Blindness America supports the development and enforcement of bans on the importation, sale and use of all fireworks, except those used in authorized public displays by licensed operators, as the only effective means of eliminating the social and economic impact of fireworks-related trauma and damage. For more on Prevent Blindness America's position on fireworks, request a copy of our complete position statement.

Source: Tu, Yongling and Granados, Demar V., 2011 Fireworks Annual Report: Fireworks-Related Deaths, Emergency Department-Treated Injuries, and Enforcement Activities During 2011, U.S. Consumer Product Safety Commission, June 2012. (<http://www.cpsc.gov/LIBRARY/2011fwreport.pdf>)



Insuring Your Eye Health

Most people require some kind of eye care throughout their lifetime, but how do they pay for it? Insurance can be a confusing topic in any circumstance but this is especially true when it comes to our eye health. Insurance for eye health care can come from various sources. It may be employer-sponsored medical or vision insurance, individually purchased medical or vision insurance, Medicare, Medicaid, state children's health insurance programs, or other public or private programs. This general overview of some key topics related to your vision insurance will help you navigate an increasingly complex arena and allow you to better care for your vision and eye health.

There are many distinctions between insurance plans, so check your plan documents carefully to determine what is covered, how often, and what your associated out-of-pocket costs may be.

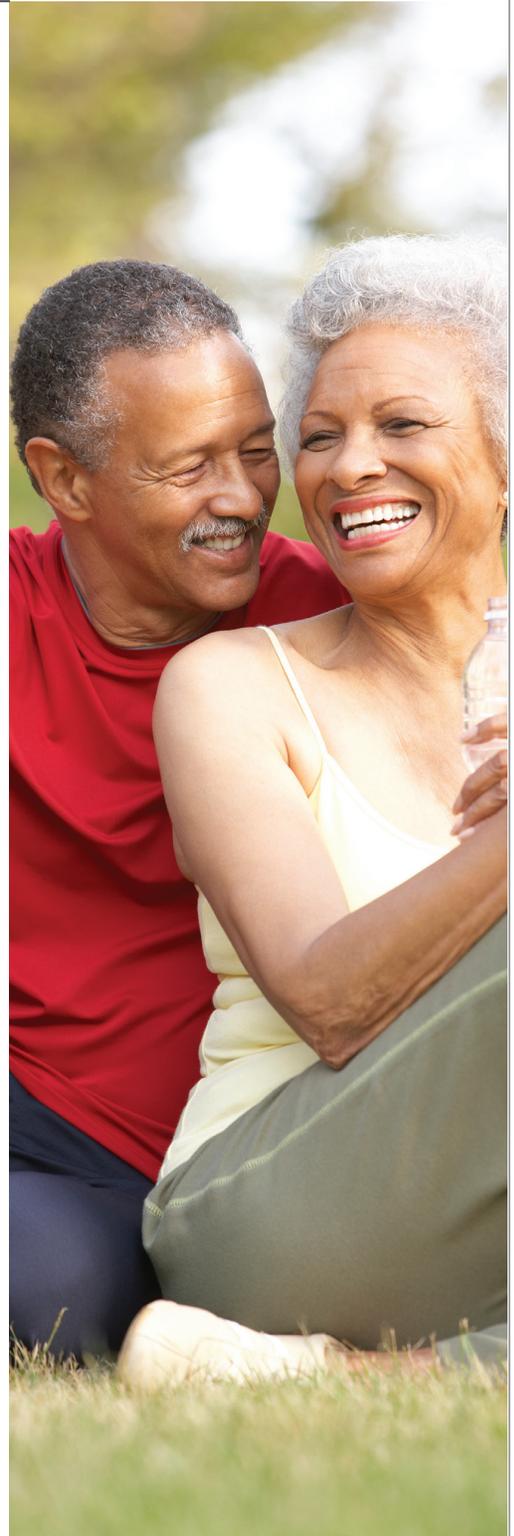
Medical Insurance vs. Vision Insurance

Vision insurance and medical insurance cover different services, but the distinction can be confusing.

Medical insurance (also commonly called "health insurance") offers coverage for most services related to the health of the eye itself when provided by an eye care professional – an optometrist or ophthalmologist. For example, exams and tests associated with diagnosed cataracts, glaucoma, diabetic eye disease, and other conditions that require specific counseling, documentation, follow-up care, regular monitoring and/or referral to a surgeon, would be covered by your medical insurance. While many plans do not cover routine exams to determine if there is an eye problem in the general population, some may include regular dilated eye exams to check for signs of disease in individuals at *high risk*. However, there is a growing trend among medical insurance plans to cover a routine eye exam, so be sure to check with your insurance carrier about your plan's benefits.

Medical insurance does not cover routine eye care related to refractive error to determine your eyeglass or contact lens prescription. It also does not generally cover the costs of eyeglasses or contact lenses.

Vision insurance is often sold as a supplemental insurance product to cover the cost of routine eye care. This generally includes a comprehensive eye exam, any associated refraction fee to determine your eyeglass prescription, and some allowance for glasses or contact lenses. A contact lens exam may be covered.



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Insuring Your Eye Health—Continued

Which Insurance Will Cover My Eye Care?

Both vision and medical insurance can be used in your optometrist or ophthalmologist's office, but which insurance plan pays for your eye care generally depends on the **reason** for your visit. If your diagnosis for the visit relates to refractive error, such as astigmatism, nearsightedness, or farsightedness, it will be covered by your vision insurance. If the diagnosis for the visit relates to glaucoma, cataract, conjunctivitis, or other conditions that require medical care, it will be paid for by your medical insurance. "Medical care" in this case can be offered by any provider licensed to provide that care in your state; this usually includes both optometrists and ophthalmologists.

What If I Don't Have Health Insurance?

There are many options for health insurance for your family. If you are unemployed, or if your employer does not offer health insurance, you may be eligible for subsidies to help you pay for insurance offered through the health insurance marketplace in your state. Based on your household income, your child may be eligible for Medicaid or your state's Children's Health Insurance Program (CHIP). Visit HealthCare.gov to find an insurance plan in your state that is appropriate for your family, and to check your eligibility for Medicaid or CHIP.

Vision Services for Children: The Affordable Care Act and Your Child's Eyes

Recent changes in federal law may impact the kinds of vision and eye health services your child has access to through health insurance.

Starting January 1, 2014, all individual health insurance plans, small group insurance plans, or plans sold in the new state-based health insurance marketplaces (exchanges) will have to include a set of "essential health benefits" (large group plans are currently excluded from this requirement). Included in this list of "essential" services is coverage for children's vision.

In most states, this means that new insurance plans will cover one comprehensive eye exam and one pair of glasses each year.

Also starting January 1, 2014, **insurance plans must cover certain preventive services without a copay or coinsurance; this includes vision screening for kids.** This screening would likely be offered in your pediatrician's office as part of a well-child visit.

To find out more, visit HealthCare.gov or call 800.318.2596.



Insuring Your Eye Health—Continued

Vision Services for Older Adults – Medicare and Your Eyes

Medicare beneficiaries, especially those at risk for or diagnosed with a variety of diseases, are entitled to a number of vision-related services. It is especially important for people with diabetes, a family history of glaucoma, or those who have suffered an eye disease or injury to be aware of and utilize these benefits. Below are details about medical benefits that may be available to you.

“Welcome to Medicare” Preventive Visit

The “Welcome to Medicare” visit is an excellent way for you to get up-to-date on important screenings and vaccinations, as well as to talk with your health care provider about how to stay healthy. You can get this introductory visit only within the first 12 months you have Medicare Part B (medical). This visit is covered one time. Your doctor will:

- Record and evaluate your medical and family history, current health conditions, and prescriptions.
- Check your blood pressure, vision, weight, and height to get a baseline for your care. *Keep in mind the vision check is a screening for vision loss risk factors, not an eye exam through dilated pupil.*
- Make sure you’re up-to-date with preventive screenings and services, such as cancer screenings and shots.
- Order further tests, depending on your general health and medical history.

Following the visit, your doctor will give you a plan or checklist with screenings and preventive services that you need. Ask about eye exams!

Routine Eye Exams

Medicare does not generally cover the costs of routine eye exams, with some exceptions. Medicare does help cover the exam if you have diabetes, or are at risk for glaucoma. Keep in mind that Medicare does not cover refractions for eyeglasses or contacts even as a part of some otherwise covered exams. Check with your eye care professional for more information. Medicare does not cover eyeglasses or contact lenses, except immediately following cataract surgery. Medicare does cover an eye exam for medical reasons, such as in the case of injury or disease. Medicare Advantage plans, which are administered by private companies, often choose to offer vision coverage and traditional Medicare beneficiaries also have the option to purchase supplemental coverage (Medigap) in addition to their Medicare coverage that may cover routine eye care or help to cover the cost of deductibles and other fees.

Glaucoma

Glaucoma is called “the sneak thief of sight” because often there are no warning signs, but there is treatment for glaucoma if detected early. A leading cause of blindness, glaucoma affects close to 2.7 million Americans age 40 and older. Medicare provides annual coverage for glaucoma screenings if you are considered to be at high risk for glaucoma. High risk is defined as:

- Individuals with a family history of glaucoma – family defined as a blood parent or sibling;
- Individuals with diabetes - either diet-controlled, oral-agent controlled, or insulin-dependent;
- African Americans age 50; and
- Hispanic individuals age 65 or older.

Insuring Your Eye Health—Continued

The covered exam for glaucoma includes a visual acuity screening; a dilated eye examination; intraocular pressure measurement; and direct ophthalmoscopy.

Medicare will cover 80 percent of the doctor's exam fee. You or your secondary insurance must pick up the deductible and the remaining 20 percent balance. A minimum of 366 days is required between glaucoma screening visits.

Find out more about glaucoma: www.preventblindness.org/glaucoma-learning-center

Diabetes

If you have diabetes, you are at risk for developing diabetic retinopathy, glaucoma, and cataracts. Diabetic eye disease can affect anyone with diabetes. Often there are no symptoms, so it is important to see your eye care professional regularly for a comprehensive eye exam.

Medicare beneficiaries with diabetes qualify for the annual glaucoma screening benefit. This benefit includes a comprehensive eye exam. Because people with diabetes need to have an eye exam at least once a year, Medicare beneficiaries should be sure to make full use of the yearly glaucoma screening benefit (discussed above) to receive an eye exam that can check for both glaucoma and diabetic retinopathy.

Find out more about diabetes and your eyes: www.preventblindness.org/diabetes-and-your-eyes

Cataract Surgery

Cataract affects millions of Americans and is a leading cause of blindness worldwide. In the U.S., cataract surgery is the most commonly performed surgical procedure in those 65 and older.

Medicare beneficiaries have two choices for cataract surgery in addition to the cataract removal: receiving basic lens replacement (IOL), paid in full by Medicare up to \$2,000, or applying the credit to new replacement lenses that can correct both near and farsightedness (multifocal IOLs). Patients are then responsible for paying the difference.

Medicare also covers corrective eyeglasses or contacts following cataract surgery with an implanted intraocular lens. Medicare pays 80 percent of the Medicare-approved amount for one pair of eyeglasses or contact lenses after each cataract surgery. The beneficiary pays any additional charges for upgraded frames and the Part B deductible.

Find out more about cataract: www.preventblindness.org/cataract

Age-related Macular Degeneration (AMD)

AMD diminishes central vision that currently affects the vision of more than 2 million Americans age 50 and older and is a leading cause of blindness. AMD is a progressive disease that, if left untreated, can result in severe vision loss and even blindness.

Medicare Part B covers treatment for beneficiaries with age-related macular degeneration, including Avastin, Eylea, Lucentis, pegaptanib, and ocular photodynamic therapy with verteporfin (Visudyne). The beneficiary pays 20 percent of the Medicare-approved amount for the drug and the doctor's services or a co-payment if the treatment is offered in a hospital outpatient setting.

Find out more about AMD: www.preventblindness.org/age-related-macular-degeneration-amd

Insuring Your Eye Health—Continued

Prescription Drug Benefits

All Medicare beneficiaries, no matter how they get their health care today or whether they have existing drug coverage, are eligible for drug coverage under a Medicare prescription drug plan (also known as a Part D plan). This includes eye medications.

There are penalties for people who miss the below enrollment deadlines:

- October 15 – annual open enrollment period begins
- December 7 – annual open enrollment period ends
- January 10 – new choices take effect

Medicare prescription drug plans will vary depending on where you live, and each plan is different. Contact the Centers for Medicare and Medicaid Services (800.633.4227 or www.medicare.gov) to better understand your choices.

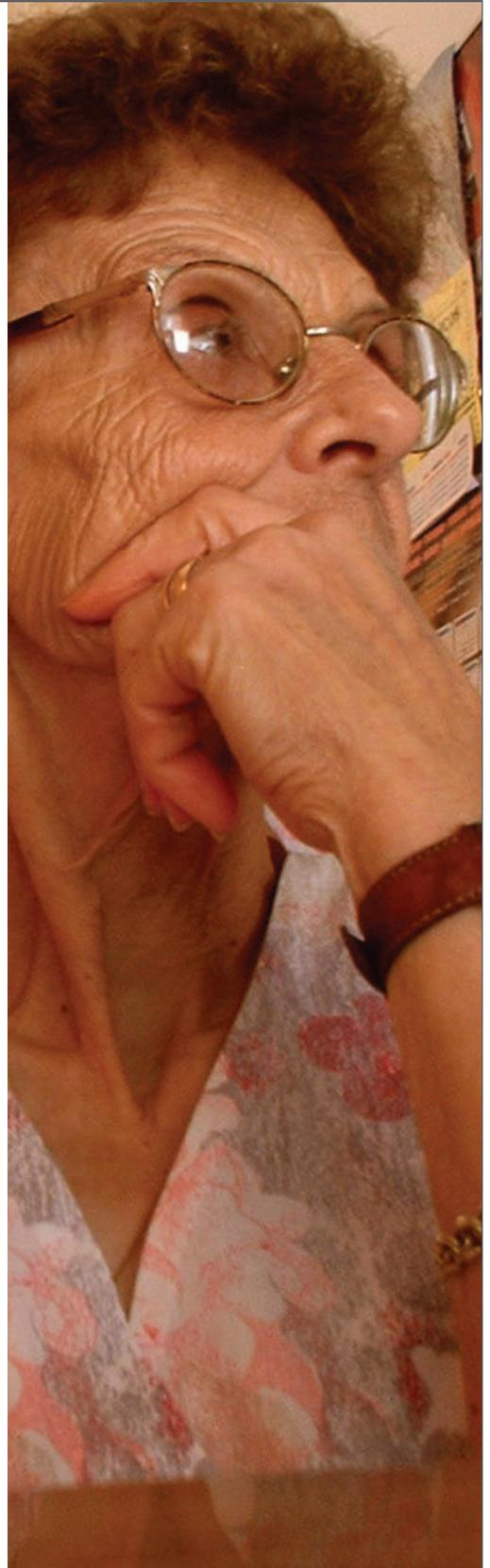
Financial assistance is available for those who meet certain income and resource limits. Contact the Social Security Administration (800.772.1213 or www.socialsecurity.gov) to learn more.

Medicare Advantage

Medicare Advantage plans are Medicare plans administered by private insurance companies. They are available to all Medicare eligible individuals and must cover all the services covered by traditional Medicare. However, these plans have the option to structure themselves in unique ways and most offer additional services, such as coverage for vision or dental care. Many of these plans cover routine eye exams and offer a glasses or contact lens benefit.

Help with Medicare

Each state has a SHIP program funded by Medicare which provides objective information about Medicare related issues. One-on-one counseling and assistance is available to people with Medicare and their families. To find the SHIP program in your state go to: www.shiptalk.org



Nutritional Supplements and Vision



You may be wondering if there are there nutritional supplements that can help your vision. Below is some information regarding studies done to see if nutritional supplements can help prevent vision loss from age-related macular degeneration (AMD) and cataracts.

Age-related Macular Degeneration (AMD)

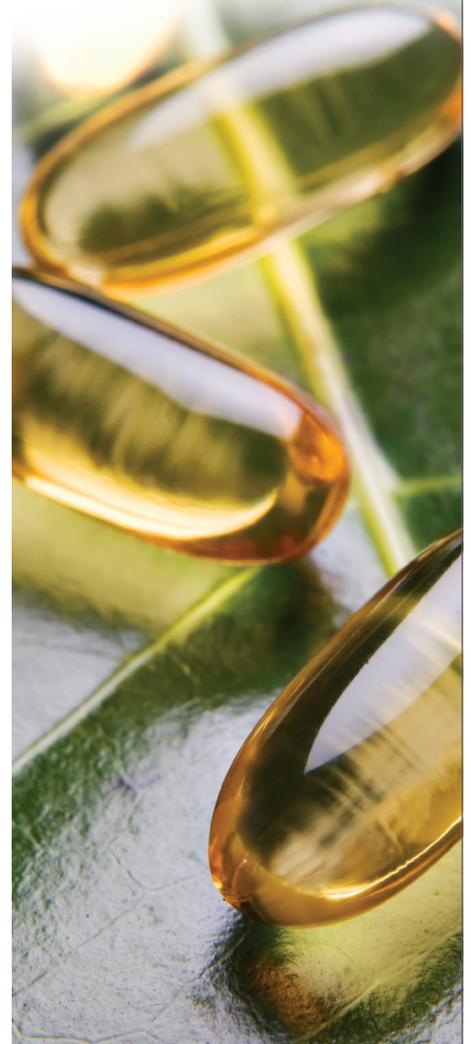
AMD is a disease that affects part of the back of the eye called the macula, the central part of the retina. This can cause the center part of your vision to become blurry or wavy. It could also cause a blind spot in the center of your vision.

Cataracts

A cataract is a clouding of the eye's lens, which blocks or changes the passage of light into the eye. The lens of the eye is located behind the pupil and the colored iris, and is normally transparent. The lens helps to focus images onto the retina—which transmits the images to the brain. Your vision may become blurry or dim because the cataract stops light from properly passing through to your retina.

Age-Related Eye Disease Study (AREDS)

Age-Related Eye Disease Study (AREDS) was a study to examine if the daily intake of certain vitamins and minerals could reduce the risk of cataract and AMD. In 2001, the National Eye Institute (NEI) released findings from AREDS. The initial AREDS findings found that pharmacological-level doses of zinc, vitamins C and E, and beta-carotene along with copper may help slow the progression of AMD only in people who were at high risk of developing advanced AMD – those with intermediate AMD in one or both eyes and those with advanced AMD in one eye but not the other. Unfortunately, these nutrients did not lower the risk of cataract development.



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Nutritional Supplements and Vision—Continued

Age-Related Eye Disease Study 2 (AREDS2)

The NEI continued research on the use of nutritional supplements to preserve vision and the results of the follow-up study called AREDS2 were released by the NEI in 2013. This study was used to determine if the AREDS formulation could be improved by adding the antioxidants, lutein and zeaxanthin, or adding omega-3 fatty acids. Previous studies have shown that these antioxidants were associated with a lower risk of developing advanced AMD. The study looked to see if lutein and zeaxanthin are a safer and more effective alternative to beta-carotene since they are from the same family of nutrients as beta-carotene. AREDS2 also examined removing beta-carotene and lowering the dose of zinc to see if it affected the risk of advanced AMD. Beta-carotene has been associated with increased risk of lung cancer in smokers and the zinc level used in the first AREDS was considered by some nutritionists to be too high.

Original AREDS Formulation

- 500 mg of vitamin C
- 400 international units of vitamin E
- 15 mg beta-carotene
- 80 mg zinc oxide
- 2 mg copper as cupric oxide

Modifications in AREDS2

- Adding lutein and zeaxanthin
- Adding omega-3
- Removing beta-carotene
- Reducing level of zinc

AREDS2 Results:

- The original AREDS formulation reduced the risk of advanced AMD by about 25 percent over a five-year period.
- Adding omega-3 fatty acids or lutein/zeaxanthin to the original AREDS formulation (containing beta-carotene) had no effect.
- The AREDS formulation with the addition of lutein/zeaxanthin and no beta-carotene had a slight reduction in risk of advanced AMD compared to those with beta-carotene.
- For those with very low levels of lutein/zeaxanthin in their diet, adding supplements to the AREDS formulation helped lower their risk of advanced AMD and progression to cataract surgery.
- Removing beta-carotene or lowering zinc produced no significant changes in the effectiveness of the AREDS formulation.

Nutritional Supplements and Vision—Continued

Living a Healthy Lifestyle

Lifelong good nutrition may lower the risk of some eye diseases. A diet rich in certain dark green vegetables may reduce the risk of AMD. You can also help your general eye health by avoiding smoking, staying active and controlling your blood pressure.

Things to Keep in Mind

Pharmaceutical companies have developed supplements for vision health based on the results of AREDS and AREDS2. Caution is advised when considering taking supplements. The following points should be kept in mind:

- There is no evidence from this study to suggest that taking nutritional supplements can prevent people who currently do not have vision problems from getting AMD in the future.
- The results are restricted to the supplements evaluated (lutein, zeaxanthin, zinc, vitamins C and E, and beta-carotene).
- If you are like many Americans and take prescription and over-the-counter medications, you must be careful when combining those medications with nutritional supplements. High-dose supplements can interfere and interact with other medications, decreasing the nutrients' absorption into the body. The high doses of supplements are several times greater than those found in most multi-supplement formulations and may have some risks. Please consult your primary care doctors and/or eye care professionals before beginning the AREDS formulation.
- The AREDS formulation is not a substitute for a multivitamin. While the AREDS formulation includes nutrients for eye health in much higher doses than found in multivitamins, it is lacking in other key nutrients.
- Supplements are not a cure. You should NEVER stop taking your medication or other treatment in favor of taking supplements, without first consulting your doctor.

Prevent Blindness America recommends periodic dilated eye exams as the best way to ensure that your vision is healthy and to keep it that way. If you have AMD, or any vision problems, you should visit your eye doctor regularly according to a treatment plan that is appropriate for your condition.



Paintball Position Statement



Position Statement

Paintball and airsoft gun activities present the potential for injury, including loss of sight and/or loss of an eye. Prevent Blindness strongly encourages that eye protection be required during ALL paintball and airsoft gun activity.

Prevent Blindness further recommends:

- Paintball participants must use eye protection meeting or exceeding the requirements of the American Society of Testing and Materials (ASTM) F1776 – Standard Specification for Eye Protection Devices for Paintball.
- Airsoft participants must use American National Standards Institute (ANSI) Z87.1 (impact-rated) goggles to protect their eyes.
- The manufacturers and distributors of paintball/airsoft equipment and the owners and operators of commercial paintball facilities must follow appropriate safety standards.
- Paintball activity should only be conducted in organized paintball facilities operated and supervised according to ASTM F1777 – Standard Practice for Paintball Field Operation.
- Paintball and airsoft gun activities in unsupervised areas, such as backyards and inside homes are strongly discouraged.
- Paintball markers (airsoft guns) should be treated with the same safety precautions as firearms. The marker should be placed on “safe” and barrel plugs should be used when exiting a playing field. The marker should be unloaded, de-gassed and locked in a storage unit when not in use.

Discussion:

In 2007, an estimated 5,476,000 people in the United States played paintball at least once during the year.ⁱ

Findings from a study of 36 patients treated for paintball to the eye found:ⁱⁱ

- Injuries were more common in men
- Only one person was injured while wearing eye protection
- Injuries were severe – 28 percent with rupture of the eyeball and 19 percent with detached retina
- Surgery was required in 81 percent of patients
- Removal of the eye (enucleation) occurred in 22 percent
- 20/40 vision or better was restored in only 36 percent



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Paintball Position Statement—Continued

In 2008, eye disorders accounted for 4 percent of injuries caused by air and paintball guns (with a higher rate of these among airsoft guns than paintball).ⁱⁱⁱ

The use of protective eyewear may have eliminated 97% of injuries in paintball users.^{iv}

Approval:

This statement was approved by the Prevent Blindness Board of Directors on November 8, 2014.

Review Date:

The paintball and airsoft guns position statement will be reviewed again in November 2016.

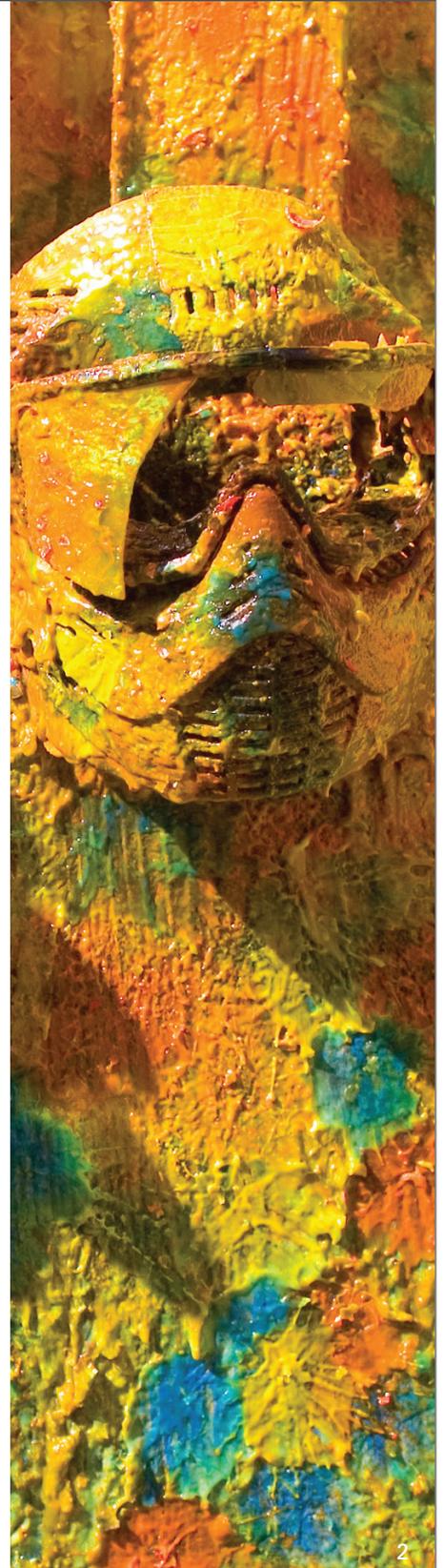
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ⁱ Sports & Fitness Industry Association, Extreme sports: an ever-popular attraction, July 07, 2008. Available at http://www.sfia.org/press/2_Extreme-Sports:-An-Ever-Popular-Attraction. Accessed January 27, 2014.

ⁱⁱ Alliman, K et al. Ocular Trauma and Visual Outcome Secondary to Paintball Projectiles, *American Journal of Ophthalmology*, Volume 147, Issue 2, Pages 239-242.e1, February 2009.

ⁱⁱⁱ Agency for Healthcare Research and Quality, Statistical Brief #119. Healthcare Cost and Utilization Project (HCUP). Rockville, MD. October 2011. Accessed at www.hcup-us.ahrq.gov/reports/statbriefs/sb119.jsp. Accessed on February 5, 2014.

^{iv} Alliman, K et al. Ocular Trauma and Visual Outcome Secondary to Paintball Projectiles, *American Journal of Ophthalmology*, Volume 147, Issue 2, Pages 239-242.e1, February 2009.



Pregnancy and Your Vision

Pregnancy brings an increase in hormones that may cause changes in vision. In most cases, these are temporary eye conditions that will return to normal after delivery. It's important for expectant mothers to be aware of vision changes during pregnancy and know what symptoms indicate a serious problem.

Refractive Changes

During pregnancy, changes in hormone levels can alter the strength you need in your eyeglasses or contact lenses. Though this is usually nothing to worry about, it's a good idea to discuss any vision changes with an eye doctor who can help you decide whether or not to change your prescription. The doctor may simply tell you to wait a few weeks after delivery before making a change in your prescription.

Dry Eyes

Some women experience dry eyes during pregnancy. This is usually temporary and goes away after delivery. The good news is that lubricating or rewetting eye drops are perfectly safe to use while you are pregnant or nursing. They can lessen the discomfort of dry eyes. It's also good to know that contact lenses, contact lens solutions and enzymatic cleaners are safe to use while you are pregnant. To reduce the irritation caused by a combination of dry eyes and contact lenses, try cleaning your contact lenses with an enzymatic cleaner more often. If dry, irritated eyes make wearing contacts too uncomfortable, don't worry. Your eyes will return to normal within a few weeks after delivery.

Puffy Eyelids

Puffiness around the eyes is another common side effect of certain hormonal changes women may have while pregnant. Puffy eyelids may interfere with side vision. As a rule of thumb, don't skimp on your water intake and stick to a moderate diet, low in sodium and caffeine. These healthy habits can help limit water retention and boost your overall comfort.

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Pregnancy and Your Vision—Continued

Migraine Headaches

Migraine headaches linked to hormonal changes are very common among pregnant women. In some cases, painful migraine headaches make eyes feel more sensitive to light. If you are pregnant and suffering from migraines, be sure to talk to your doctor before taking any prescription or non-prescription migraine headache medications.

Prenatal care helps keep both you and your unborn child healthy. Be sure to tell your doctor if you are having any problems. Keep your eye doctor up-to-date about your overall health. Tell him or her about any pre-existing conditions, and about any prescription and non-prescription medications you are taking.

Diabetes

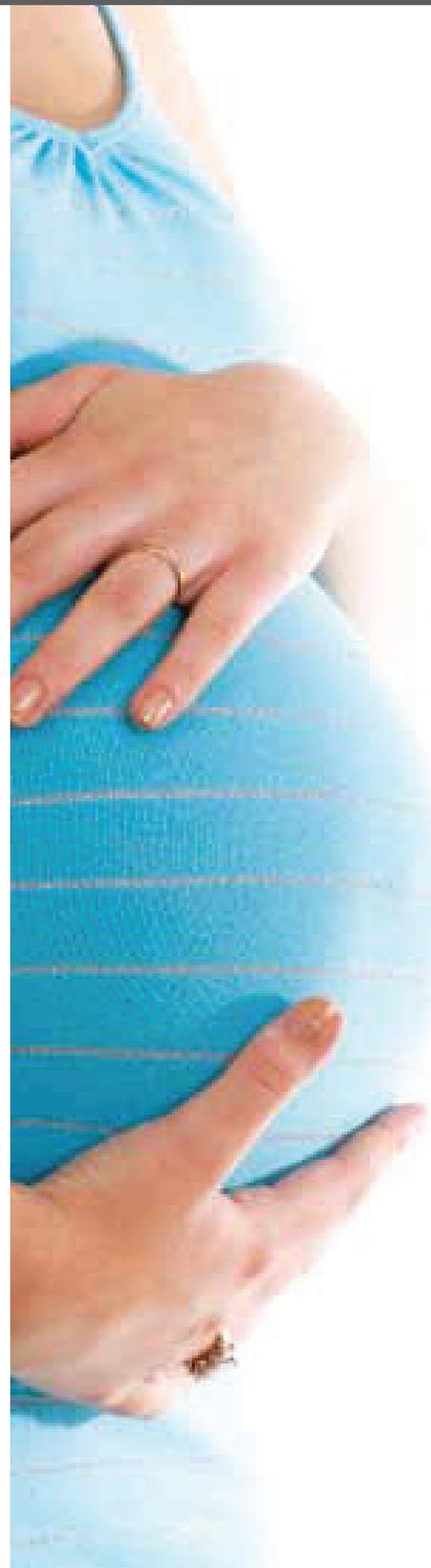
Women who are diabetic before their pregnancy and those who develop gestational diabetes need to watch their vision closely. Blurred vision in such cases may indicate elevated blood sugar levels.

High Blood Pressure

In some cases, a woman may have blurry vision or spots in front of her eyes while pregnant. These symptoms can be caused by an increase in blood pressure during pregnancy. At excessive levels, high blood pressure can even cause retinal detachment.

Glaucoma

Women being treated for glaucoma should tell their eye doctor right away if they are pregnant or intend to become pregnant. While many glaucoma medications are safe to take during pregnancy, certain glaucoma medications such as carbonic anhydrase inhibitors can be harmful to the developing baby.



VISION SCREENING IS KEY TO HEALTHY DEVELOPMENT!

ASK if your child has been screened.

TALK about the results.

ACT on referrals.



Eye health is important for people at all ages, but particularly for children.

Children use their vision to learn about their world. It is important that your child's eyes are checked during well baby and well child visits to make sure they are healthy.

Not all vision problems can be seen.

Children who have a problem may not realize it or be able to describe a problem with their sight. Regular eye screenings will help find possible problems.

Work with your medical home to keep your child's eyes healthy!

WHAT IS A "MEDICAL HOME?"

A MEDICAL HOME is the kind of primary health care we all want and deserve. A MEDICAL HOME is not a place—it is the way care is provided to your child/youth and your family.

At the core of a MEDICAL HOME is a knowledgeable, helpful health care provider and care team chosen by your family to take care of your child's health needs. The health care provider coordinates your care with specialists (other providers such as eye doctors and home health care, and community resources.)

The MEDICAL HOME also creates a central, trusted location where all of your child's medical history is collected.

A SPECIAL MESSAGE FOR THE PARENTS OF CHILDREN BORN PREMATURELY (LESS THAN 32 COMPLETED WEEKS), AND CHILDREN WITH DEVELOPMENTAL DELAY OR NEUROLOGICAL PROBLEMS:

Children born early, those with delays in their growth, or with neurological conditions are at greater risk of vision problems. These children should visit an eye doctor regularly for a full eye exam.

WANT MORE INFORMATION?

FINANCIAL HELP FOR EYE CARE:

preventblindness.org/vision-care-financial-assistance-information
nei.nih.gov/health/financialaid.asp

NATIONAL CENTER FOR CHILDREN'S VISION AND EYE HEALTH:

nationalcenter.preventblindness.org

NATIONAL CENTER FOR MEDICAL HOME IMPLEMENTATION:

medicalhomeinfo.org

AMERICAN ACADEMY OF PEDIATRICS—BRIGHT FUTURES INITIATIVE:

brightfutures.aap.org

PREVENT BLINDNESS AMERICA:

preventblindness.org

NATIONAL DISSEMINATION CENTER FOR CHILDREN WITH DISABILITIES:

nichcy.org/families-community/help/parentgroups

FAMILY TO FAMILY HEALTH INFORMATION CENTERS:

fv-ncfpp.org/f2fhic/about_f2fhic/

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HAVE MORE QUESTIONS?

Call **1.800.331.2020** or email **info@preventblindness.org**



**NATIONAL CENTER FOR
MEDICAL HOME
IMPLEMENTATION**

A cooperative agreement between the Maternal and Child Health Bureau/HRSA and the American Academy of Pediatrics



AT PREVENT BLINDNESS AMERICA



DID YOU KNOW...

Children generally do not complain about problems with their vision. Eye problems that are not corrected may lead to a permanent loss of sight.

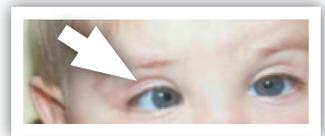
What you can do:

1. Watch your child while at play, and while looking at books, pets or other people. If something does not seem right, discuss this with your child's doctor.
2. Talk with your doctor about any family history of vision problems (such as "lazy eye", a "crossed eye", use of an eye patch as a child to correct vision, or need for eyeglasses with a strong prescription).
3. Ask at every well child visit if the child's eyes and vision have been checked.
4. Ask for results of the vision screening and make sure you understand what they mean.
5. Your child's doctor may recommend that he/she see an eye doctor to evaluate a problem found during the screening. If so, be sure to make and keep that appointment.
6. After the eye appointment, make sure all results are sent back to your child's doctor and a copy is provided to you.

SIGNS OF A VISION PROBLEM

Many vision problems in children cannot be seen. But sometimes there are signs of a vision problem as shown below. Contact your child's doctor if you notice any of these signs:

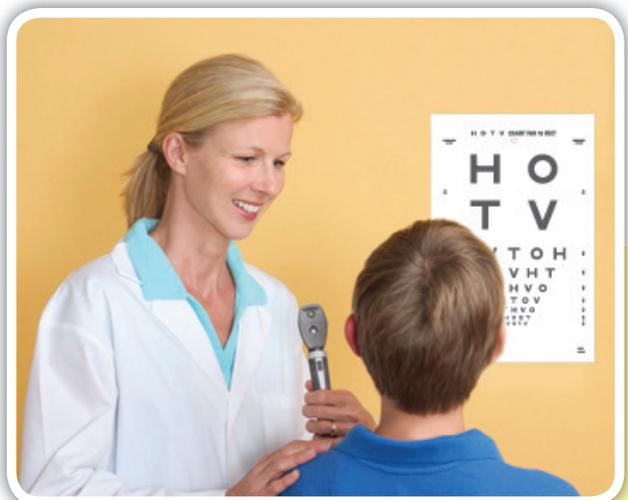
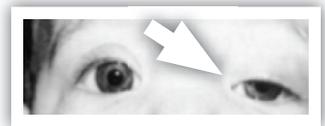
Strabismus, often called a "crossed-eye" or "squint."



Leukocoria, or a pupil that looks white when light reflects on the eye.



Ptosis, or a drooping eyelid that blocks part of what the eye can see.



BE AN ACTIVE PARTNER IN YOUR CHILD'S HEALTH!

The actions you take now will help keep your child's vision healthy. Be sure to:

INCLUDE

- Vision screenings or vision risk assessments with every YEARLY well child check-up.
- Follow up on ALL vision screening referrals.

WATCH & DISCUSS

- Talk with your child's doctor about any questions you have.
- Share concerns that you or others may have noticed about your child.

BEFORE AND AFTER AN EYE EXAM

- Keep the appointment.
- Ask for the medical report to be sent to your child's medical home and get a copy for you too!
- Follow all recommended vision treatments as instructed by your eye doctor.
- Ask your eye doctor about any additional help or tools the child might need for school and how to get them.

PROTECT

- Wear sunglasses that block 100% of UVA and UVB rays from the sun.
- Use the correct eye safety wear for sport activities.

Let your child's medical home know if you have any problems finding or paying for an eye exam or treatment.

There are many organizations available to help families that need eye care for their children.



SABÍA USTED QUE ...

Generalmente, los niños no se quejan de problemas con su visión. Problemas en los ojos que no se corrigen pueden conducir a una pérdida permanente de la vista.

Lo que puede hacer:

1. Observe a su hijo, mientras que juega y mientras que mira libros, a mascotas y a otras personas. Si algo no se parece correcto, discuta este con el médico de su hijo.
2. Hable con su médico de cualquier historia familiar de problemas con la visión (como "ojo perezoso", un "ojo cruzado", el uso de un parche en el ojo de niñez para corregir la visión, o la necesidad de anteojos con receta fuerte).
3. Pregunte en cada visita del niño si los ojos y la visión se han comprobado.
4. Pregunte por los resultados del examen ocular y asegúrese de que entiende lo que significan.
5. El médico de su hijo puede recomendar que él / ella vea a un oftalmólogo para evaluar un problema encontrado durante la proyección. Si es así, asegúrese de hacer y mantener esa cita.
6. Después de la cita con el oftalmólogo, asegúrese de que todos los resultados se devuelvan de nuevo al médico de su hijo y se proporcione una copia a usted.

LOS SIGNOS DE UN PROBLEMA DE VISIÓN

Muchos problemas de visión en los niños no se pueden ver. Pero a veces hay signos de un problema ocular, como se muestra a continuación. Contacte al médico de su hijo si usted nota cualquiera de estos signos:

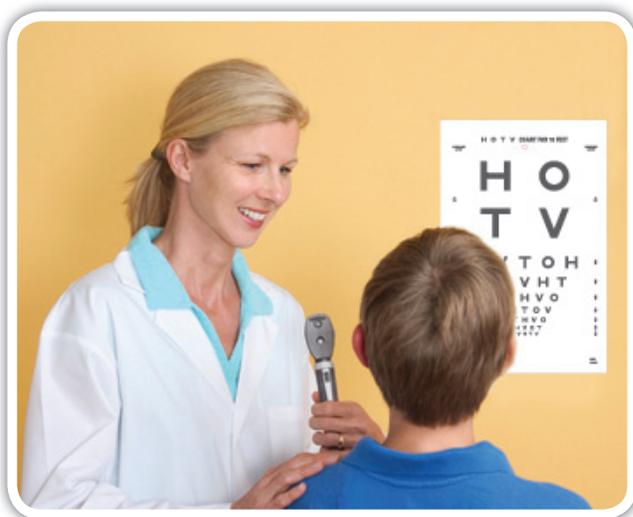
Estrabismo, a menudo llamada "ojo cruzado" o "bizquera."



Leucocoria, o una pupila que se ve blanca cuando la luz se refleja en el ojo.



Ptoxis, o párpado caído que bloquea parte de lo que el ojo puede ver.



EL EXAMEN DE LA VISTA ES LA CLAVE PARA EL DESARROLLO SALUDABLE!

PREGUNTE si su hijo ha sido proyectados.
HABLE de los resultados.
ACTUA en las referencias.



La salud visual es importante para las personas en todas las edades, pero especialmente para los niños.

Los niños utilizan su visión para aprender sobre su mundo. Es importante que los ojos de su hijo sean examinados durante las visitas de bien niño para asegurarse de que estén sanos.

No todos los problemas de visión se pueden ver.

Los niños que tienen un problema que no se dan cuenta o son capaces de describir un problema con su vista. Exámenes oculares regulares ayudarán a encontrar problemas posibles.

¡Trabaje con su hogar médico para mantener los ojos sanos del niño!

¿QUÉ ES UN "HOGAR MÉDICO?"

Un HOGAR MÉDICO es la clase de atención primaria de la salud que todos queremos y merecemos. El hogar médico no es un lugar—es la manera que el cuidado se proporciona a su hijo / y a su familia.

En el núcleo de un HOGAR MÉDICO es un médico bien informado y útil, y un equipo de atención elegido por su familia para cuidar las necesidades de salud de su hijo. El médico coordina la atención con especialistas (otros proveedores, como los oftalmólogos y la atención médica en el hogar, y los recursos de la comunidad.)

El HOGAR MÉDICO también crea un lugar central de confianza, donde la historia clínica de su hijo se completa.

UN MENSAJE ESPECIAL PARA LOS PADRES DE LOS NIÑOS NACIDOS PREMATURAMENTE (MENOS DE 32 SEMANAS COMPLETAS), Y LOS NIÑOS CON DISCAPACIDADES DE DESARROLLO , RETRASO O PROBLEMAS NEUROLÓGICOS:

Los niños nacen antes de tiempo, las personas con retrasos en su crecimiento, o con condiciones neurológicas están en mayor riesgo de problemas oculares. Estos niños deben visitar a un oftalmólogo regularmente para un examen ocular completo.

¡SEA UN PAREJA ACTIVA EN LA SALUD DE SU HIJO!

Las acciones que toma ahora le ayudarán a mantener a su hijo de una visión saludable. Asegúrese de:

INCLUYE

- Exámenes de la vista o evaluaciones de riesgo con la visión con cada bien chequeo del niño ANUAL.
- Investigue de todas las referencias para la visión.

MIRE Y DISCUTA

- Hable con el médico de su hijo sobre cualquier pregunta que tenga.
- Comparta inquietudes que usted u otros habrán dado cuenta de su hijo.

ANTES Y DESPUÉS DE UN EXAMEN OCULAR

- Mantenga la cita.
- Solicite el informe médico que se enviará al hogar médico de su hijo y obtenga una copia para usted también.
- Siga todos los tratamientos recomendados para la visión como lo indicó el oftalmólogo.
- Pregúntele a su oftalmólogo de cualquier ayuda o herramientas que el niño podría necesitar para la escuela y cómo obtenerlas.

PROTEJA

- Lleve gafas de sol que bloqueen el 100% de los rayos UVA y UVB del sol.
- Utilice el desgaste ocular correcto de la seguridad para actividades deportivas.

Avisa a atención el médico de su hijo si tiene cualquier problema encontrar o pagar por un examen ocular o el tratamiento.

Hay muchas organizaciones disponibles que pueden ayudar.

¿QUIERE MÁS INFORMACIÓN?

AYUDA ECONÓMICA PARA EL CUIDADO DE LOS OJOS:

preventblindness.org/vision-care-financial-assistance-information

nei.nih.gov/health/financialaid.asp

CENTRO NACIONAL PARA LA VISIÓN Y LA SALUD OCULAR DE NIÑOS:

nationalcenter.preventblindness.org

CENTRO NACIONAL PARA IMPLEMENTACIÓN EN CASA DE SALUD:

medicalhomeinfo.org

AMERICAN ACADEMY OF PEDIATRICS-BRIGHT FUTURES INITIATIVE:

brightfutures.aap.org

PREVENT BLINDNESS AMERICA:

preventblindness.org

CENTRO NACIONAL DE DISEMINACIÓN DE INFORMACIÓN PARA NIÑOS CON DISCAPACIDADES:

nichcy.org/families-community/help/parentgroups

FAMILIA A FAMILIA CENTRO DE INFORMACIÓN DE LA SALUD:

fv-ncfpp.org/f2fhic/about_f2fhic/

¿TIENE MÁS PREGUNTAS?

Llame al **1.800.331.2020** o por correo electrónico **info@preventblindness.org**



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Quick Facts: Children's Eye Problems



AT PREVENT BLINDNESS

National Center for Children's
Vision & Eye Health
211 West Wacker Drive, Suite 1700
Chicago, Illinois 60606
nationalcenter.preventblindness.org

More than 12.1 million school-age children, or one in four, has a vision impairment. Among preschool-age children, more than one in 20 has a vision problem that can cause permanent sight loss if left untreated. The most common types of eye problems seen in children are:

- > Myopia (nearsightedness)
- > Strabismus (crossed eyes)
- > Amblyopia (lazy eye)

The most common causes of blindness among children are: congenital cataracts, retinopathy of prematurity and other complications caused by premature births.

Hospital emergency rooms treat thousands of children each year who suffer from eye injuries in and around the home. In general, the most common causes of eye injuries to children age 14 and younger are caused by:

- > Toys not suitable for the child's age or abilities, and broken toys
- > Pens and Pencils
- > Adhesives
- > General Household Cleaners
- > Furniture
- > Flatware and Table Settings
- > Non-Cosmetic Bleaches
- > Cigarettes, Cigars, Pipes, Lighters
- > Grooming Products, Cosmetics (Hair Care, Makeup)
- > Paper and Cardboard Products



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Quick Facts: Children's Eye Problems—Continued

Each year, thousands of children suffer serious eye injuries while participating in sports. Wearing protective eyewear can help prevent nearly all of these injuries. The sports associated with the most injuries in children age 14 and younger:

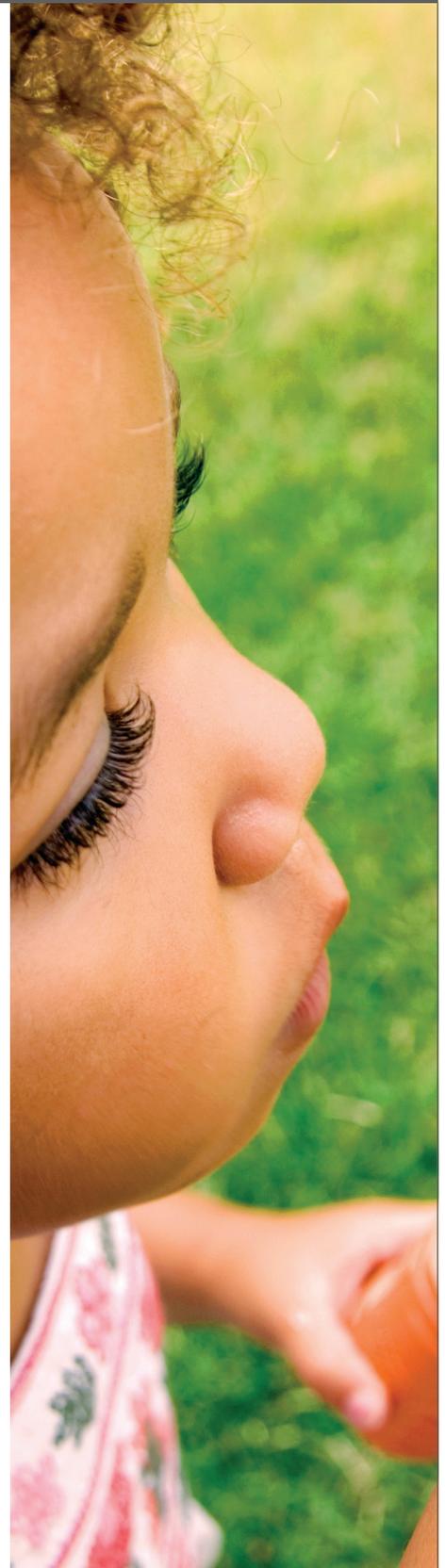
- > Baseball/Softball
- > Water and Pool Activities
- > Guns—Air, Gas, Spring, BB
- > Basketball
- > Ball Sports (unspecified)
- > Bicycles
- > Football
- > Winter Sports (Skiing, Hockey, Ice Skating, Snowmobiling, etc.)
- > Racquet Sports

About 90% of all eye injuries and 50% of all cases of blindness are preventable. You can help protect your child's sight by being aware of risks and taking proper precautions.

A child's eyes should be checked shortly after birth, before starting school (age 3 or 4), and throughout the school years as needed.

Regular eye care is important even when your child shows no signs of eye trouble.

For a free copy of the Prevent Blindness *Children's Eye Health Position Statement*, call 800.331.2020 or visit PreventBlindness.org.



Tips for Buying Sports Eye Protectors

More than 40,000 people a year suffer eye injuries related to sports activities. Using the right kind of eye protection while playing sports can help prevent serious eye injuries and even blindness.

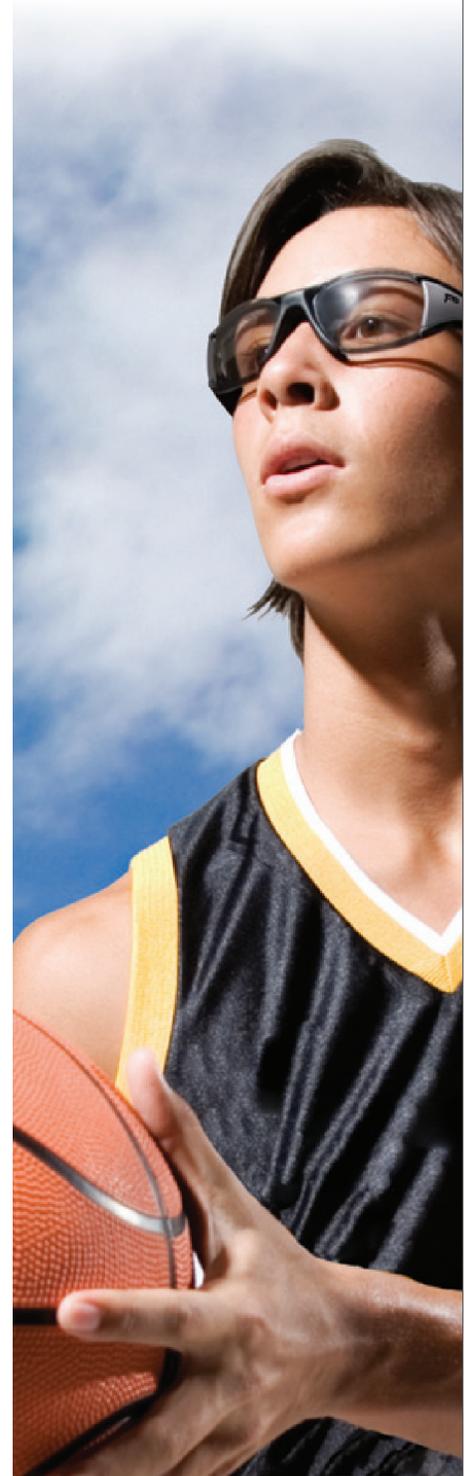
Prevent Blindness America recommends that athletes wear sports eyeguards when participating in sports. Prescription glasses, sunglasses and even occupational safety glasses do not provide adequate protection.

Sports eyeguards come in a variety of shapes and sizes. Eyeguards designed for use in racquet sports are now commonly used for basketball and soccer and in combination with helmets in football, hockey and baseball. The eyeguards you choose should fit securely and comfortably, and allow the use of a helmet if necessary.

Guidelines for buying the right sports eyeguards for you

- > If you wear prescription glasses, ask your eye doctor to fit you for prescription eyeguards. If you're a monocular athlete (a person with only one eye that sees well), ask your eye doctor what sports you can play safely. Monocular athletes should always wear sports eyeguards.
- > Buy eyeguards at sports specialty stores or optical stores. At the sports store, ask for a salesperson who is familiar with eye protectors to help you.
- > Don't buy sports eyeguards without lenses in them. Only protectors with lenses are recommended for sports use. Make sure the lenses either stay in place or pop outward in the event of an accident. Lenses that pop in against your eyes can be very dangerous.

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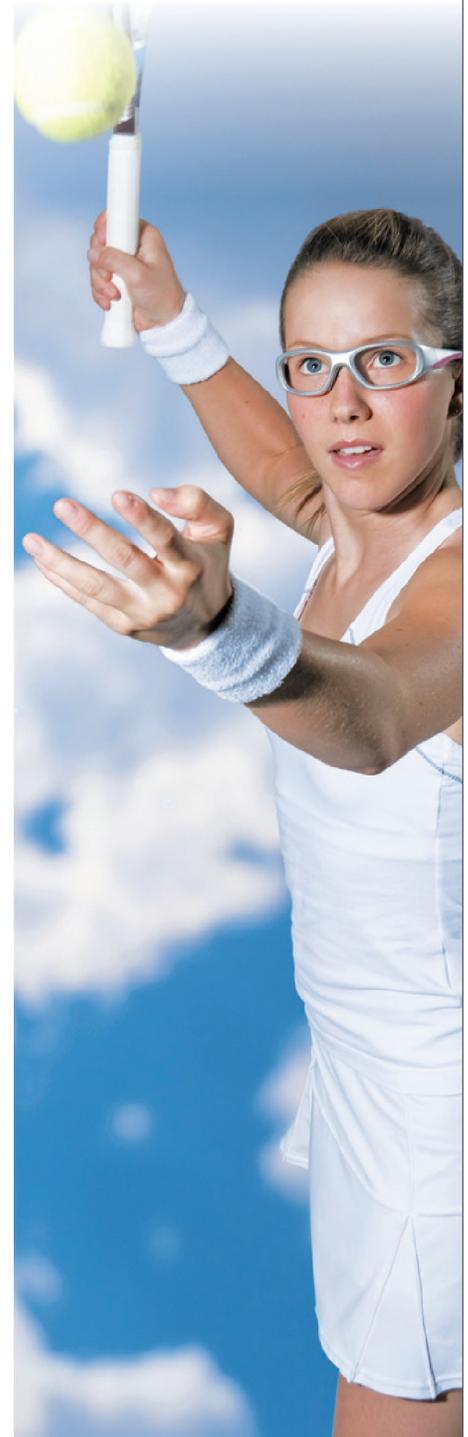
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Tips for Buying Sports Eye Protectors—Continued

- > Fogging of the lenses can be a problem when you're active. Some eyeguards are available with anti-fog coating and others include side vents for additional ventilation. Try on different types to determine which is right for you.
- > Polycarbonate eyeguards are the most impact resistant. For sports use, polycarbonate lenses must be used with protectors that meet or exceed the requirements of the American Society for Testing and Materials (ASTM). Each sport has a specific ASTM code, so check the package to make sure the right ASTM label for the sport is on the product, before buying it.
- > In order to be assured that your eyes are protected, it is important that any eye guard or sports protective eyewear that you buy have on its packaging that it is ASTM F803 approved. This eyewear is performance tested to give you the highest levels of protection.
- > Sports eyeguards should be padded or cushioned along the brow and bridge of the nose. Padding will prevent the eyeguards from cutting your skin.
- > Try on the eye protector to determine if it's the right size. Adjust the strap and make sure it's not too tight or too loose. If you bought your eyeguards at an optical store, an optical salesperson can help you adjust the eye protector for a comfortable fit.

Until you get used to wearing a pair of eyeguards, it may feel strange, but bear with it. It's a lot better than suffering an eye injury — an injury that could possibly lead to the loss of vision!



Sports-Related Eye Injuries by Age



211 West Wacker Drive, Suite 1700
Chicago, Illinois 60606
800.331.2020
PreventBlindness.org

Activity	Estimated Injuries*	Ages 0-14	Ages 15+
Water and Pool Activities	5,480	2,608	2,872
Basketball	4,644	1,271	3,373
Baseball/Softball	2,353	1,149	1,203
Guns—Air, Gas, Spring, BB	2,312	1,394	917
Football	1,762	1,101	662
Soccer	1,669	415	1,253
Bicycles	1,634	619	1015
“Health Club” (Exercise, Weightlifting)	1,278	275	1,003
Racquet Sports	1,179	485	694
Golf	657	26	631
Fishing	650	185	465
Scooters, Skateboards, Go-Karts	533	280	253
Boxing, Wrestling	515	30	485
Ball Sports, Unspecified	401	266	134
Winter Sports	161	102	59
Totals Top 15 Categories	25,228	10,206	15,019

*Totals may not equal due to rounding.

Table source: Prevent Blindness.

Based on statistics provided by the U.S. Consumer Product Safety Commission, Directorate for Epidemiology; National Injury Information Clearinghouse; National Electronic Injury Surveillance System (NEISS). Product Summary Report—Eye Injuries Only—Calendar Year 2013.



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Recommended Sports Eye Protectors

Each year, more than 40,000 people are treated for eye injuries related to sports activities. Using the right kind of eye protection while playing sports can help prevent serious eye injuries and even blindness.

For sports use, polycarbonate lenses must be used with protectors that meet or exceed the requirements of the American Society for Testing and Materials (ASTM). Each sport has a specific ASTM code, so look for the ASTM label on the product before making a purchase.

Baseball

Type of eye protection:

- Faceguard (attached to helmet) made of polycarbonate material
- Sports eyeguards

Eye injuries prevented:

- Scratches on the cornea
- Inflamed iris
- Blood spilling into the eye's anterior chamber
- Traumatic cataract
- Swollen retina

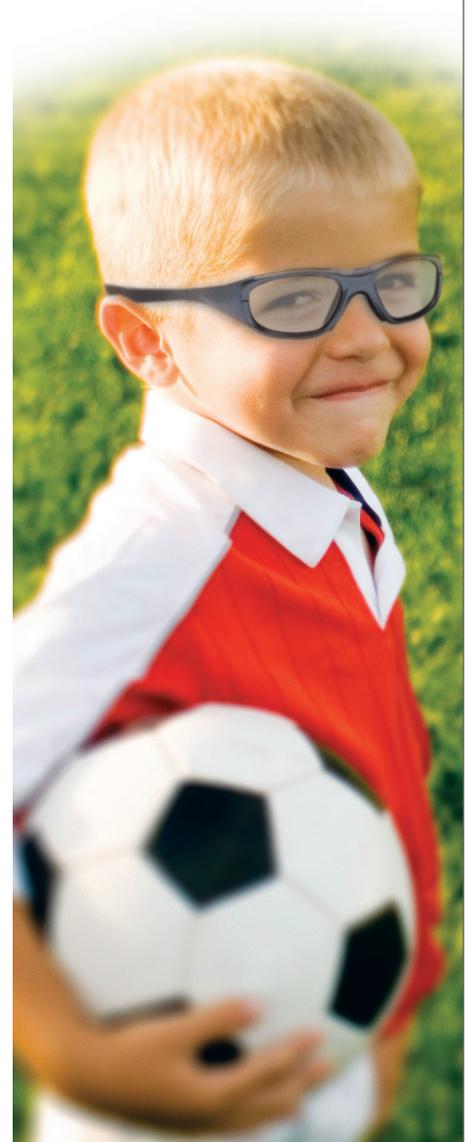
Basketball

Type of eye protection:

- Sports eyeguards

Eye injuries prevented:

- Fracture of the eye socket
- Scratches on the cornea
- Inflamed iris
- Blood spilling into the eye's anterior chamber
- Swollen retina



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Recommended Sports Eye Protectors—Continued

Soccer

Type of eye protection:

- Sports eyeguards

Eye injuries prevented:

- Inflamed iris
- Blood spilling into the eye's anterior chamber
- Swollen retina

Football

Type of eye protection:

- Polycarbonate shield attached to faceguard
- Sports eyeguards

Eye injuries prevented:

- Scratches on the cornea
- Inflamed iris
- Blood spilling into the eye's anterior chamber
- Swollen retina

Hockey

Type of eye protection:

- Wire or polycarbonate mask
- Sports eyeguards

Eye injuries prevented:

- Scratches on the cornea
- Inflamed iris
- Blood spilling into the eye's anterior chamber
- Traumatic cataract
- Swollen retina



Sunglasses

Why do I need sunglasses?

Sunglasses can help your eyes in two important ways. They help filter light and they protect against the damaging rays of the sun. Good sunglasses reduce glare and filter out 99 to 100% of ultraviolet (UV) rays. They should be comfortable and protect your eyes without any distortion.

How does the sun damage the eyes?

Three types of rays come from the sun:

- **Visible:** what you see as color.
- **Infrared:** invisible but felt as heat.
- **Ultraviolet (also called UV radiation):** invisible but often called “sunburn rays.” UV radiation includes two types of rays that normally reach the earth, UV-A rays and UV-B rays.

These invisible UV rays can damage your eyes. Some of the damage can happen right away and some can occur over a lifetime of exposure. Constant exposure to bright sunlight can damage the cornea (the clear outer part of the eye that allows light through to the retina), the lens (the part of the eye responsible for focusing), and the retina (the innermost layer of the eye that sends an image to the brain).

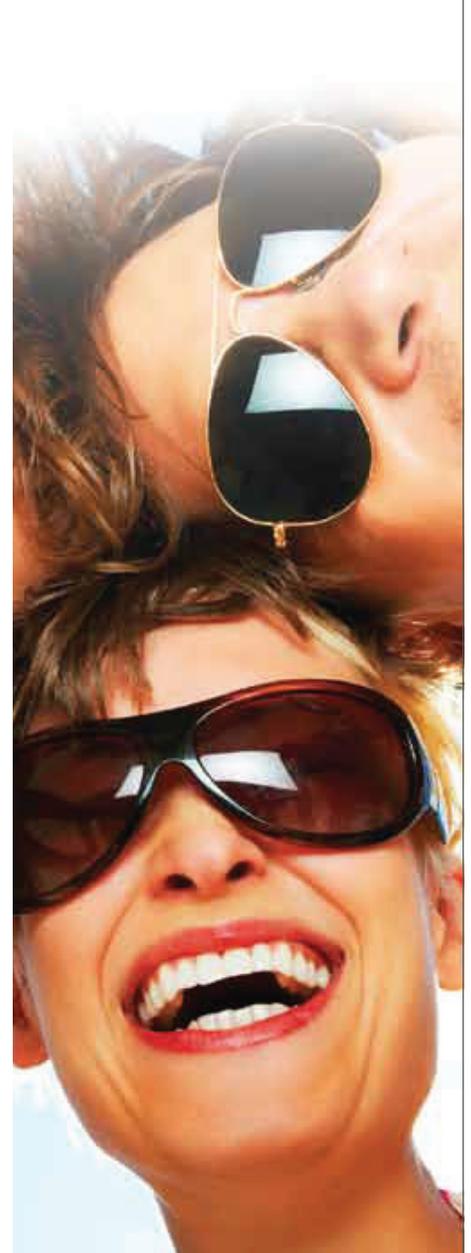
How can sunglasses protect my eyes from UV radiation?

All types of eyewear, including prescription and nonprescription glasses, contact lenses and lens implants, should absorb UV-A and UV-B rays. UV protection does not cost a lot of money and does not get in the way of seeing clearly.

Shop for sunglasses that block 99 to 100% of both types of ultraviolet rays: UV-A and UV-B. Sunglasses should also eliminate glare and squinting. Be wary of labels that claim a product blocks harmful UV without specifying exactly what amount of UV rays they block.

Who is at risk for eye problems caused by UV rays?

Anyone who spends time in the sun is at risk, but those who spend long hours in the sun because of work or sports, have a higher health risk from UV rays. So may people who have had cataract surgery and/or certain retinal disorders. Some people are more sensitive to UV rays, including those who take certain medications, such as tetracycline, sulfa drugs, birth control pills, tranquilizers, and diuretics, as they increase the eye’s sensitivity to light.



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Sunglasses—Continued

Types of Lenses

Clip-on lenses: These are used on top of prescription eyeglasses. They are convenient, but may not fully cover the lens. Together with the lens surfaces of the regular glasses, clip-on lenses may cause reflections. They may scratch prescription lenses or fall off.

Gradient lenses: Sunglasses can be of gradient density (dark on the top, tapering to light at the bottom) or double gradient density (dark top and bottom, lighter in the center). They come in handy when sunlight comes from overhead, or is reflected into the eyes from below.

Mirrored lenses: Lenses can be coated with a thin metallic film, which looks like a mirror and reflects light rays, further reducing the amount of light that can reach the eye.

Photochromatic lenses: This type of lens changes according to the amount of light. They darken in bright light and lighten in dim light. These lenses are helpful under a wide variety of light conditions. The amount of light, lens thickness and temperature all affect how dark the lenses will get. One problem with these lenses is that they may not change quickly enough to adjust to new light situations.

Polarizing lenses: These lenses, which reduce glare and “bounce-up” reflections from flat surfaces, are useful for driving, boating, fishing and other activities where there is glare off the water or the ground.

Color of Lenses

Neutral gray or “smoke” lenses allow for best color perception. Other good choices are amber or brown tints (which usually block more blue light), or green. Dark lenses may be preferred by those whose eyes are very sensitive to light. Tints such as red, orange, blue or purple are unsuitable because they may interfere with color perception and tend to let in too much light. Since all of the colors we see are made up of visible light, tint is not related to the degree of UV protection provided.

Quality and Safety of Lenses

Lenses should be inspected for flaws such as scratches, bubbles and distortions. Poorly made glasses will not damage the structure of your eyes. But flaws and distortion in the lenses may cause your eyes to work harder. That can result in squinting, blinking, tearing, and even slight headaches, nausea, and dizziness. The Food and Drug Administration requires that all lenses be impact resistant and made of optical-quality glass or plastic. These are available with or without a corrective prescription. This does not mean the lenses are shatterproof or unbreakable, but that they can withstand moderate impact.

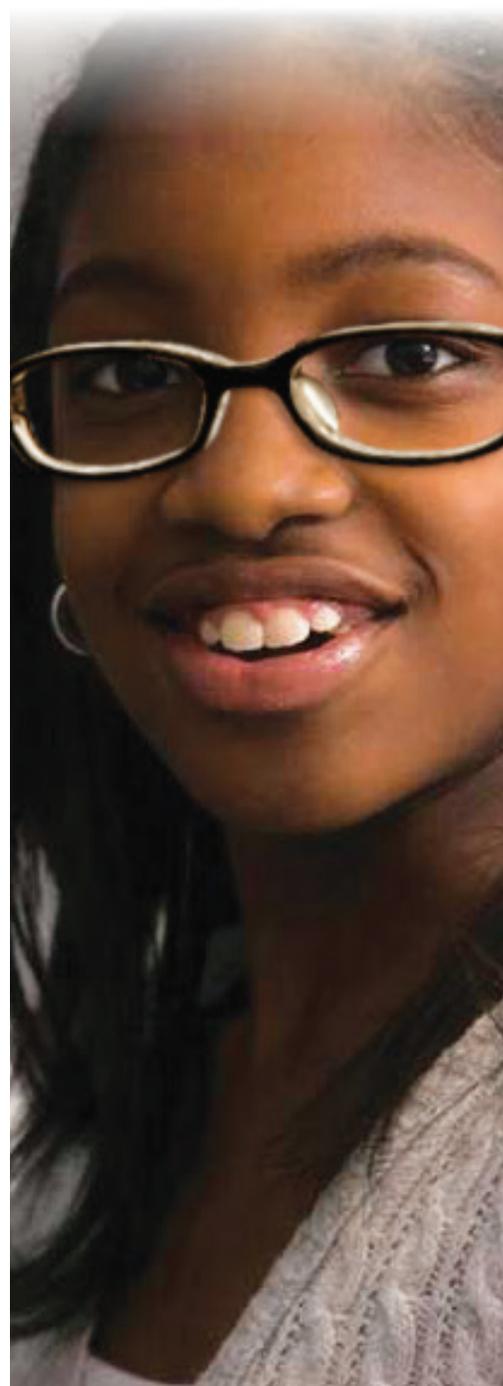
Glasses for ball sports or sports with physical impact should be made of polycarbonate, which is the most shatter-resistant material widely available today. Polycarbonate is also the best choice for children’s sunglasses.



The Affordable Care Act and Your Child's Eyes



211 West Wacker Dr, Suite 1700
Chicago, IL 60606
800.331.2020
PreventBlindness.org



We all want our children to have every opportunity for a happy, healthy, and successful life. There is no question that the early childhood years are critical in their development. Vision issues can often be an unnecessary hurdle, but poor vision does not have to be a barrier to a child's well-being. Early attention to your child's vision and eye health can help keep them on a positive path for the future. But sometimes affordability of health care, including eye and vision health care can keep them from this path. Recent changes in federal law may help by impacting the kinds of vision services your child has access to through health insurance.

Did you know that the Affordable Care Act could have a big impact on your child's vision?

Starting January 1, 2014, all individual health insurance plans, small group insurance plans, or plans sold in the new state-based health insurance marketplaces are required to include a set of essential health benefits. This requirement does not apply to large group plans. Included in this list of "essential" services is coverage for children's vision care.

In most states, this means that new insurance plans will cover one comprehensive eye exam and one pair of glasses each year. Visit www.healthcare.gov to find out more about the benefit in your state.

Also starting January 1, 2014, **insurance plans must cover certain preventive services without a copay or coinsurance; this includes vision screening for kids.** This screening would likely be offered in your pediatrician's office as part of a well-child visit.

Note: Insurance remains largely regulated at the state level. Be sure to check your state's requirements (and your plans specific coverage).

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The Affordable Care Act and Your Child's Eyes—Continued

What's the difference between a screening and an eye examination?

Both vision screenings and eye examinations may play an important role in your child's vision and eye health, so it's important to understand their distinctions.

*An **eye exam** is performed by an eye doctor (ophthalmologist or optometrist). An exam diagnoses eye disorders and diseases, and prescribes treatment. A comprehensive eye examination is generally understood to include an evaluation of the refractive state, dilated fundus examination, visual acuity, ocular alignment, binocularity, and color vision testing where appropriate.*

*A **vision screening** is not a diagnostic process and does not replace a comprehensive examination by an eye doctor. The purpose of a vision screening is to identify vision problems in a treatable stage, provide education, and provide a referral to an eye care provider for a comprehensive eye exam (if needed). These screenings should be routinely done by your child's medical doctor (and may also be conducted in your child's preschool, school, or other community settings).*

Find out more about health insurance coverage for your family at www.Healthcare.gov today!

What if we don't have health insurance?

There are many options for health insurance for your family. If you are unemployed, or if your employer does not offer health insurance, you may be eligible for subsidies to help you pay for insurance offered through the health insurance marketplace in your state. Based on your household income, your child may be eligible for Medicaid or your state's Children's Health Insurance Program (CHIP). Some children previously covered by CHIP may now be eligible for Medicaid. Visit www.Healthcare.gov to find an insurance plan in your state that is appropriate for your family, and to check your eligibility for Medicaid or CHIP.



Eye Safety Tips for Your Home



healthy eyes for healthy futures

StarPupils.org

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Most people don't know there are many common objects in the home that can cause serious eye injuries to children. Watching children is the best precaution, but there are other steps you can take to ensure their safety and well-being. Teaching kids about eye safety is one way. Using eye protection for risky tasks is another.

Actions often speak louder than words. Adults who wear eye protection are teaching their kids a valuable lesson. In addition, the following home safety tips can help keep you and your children safe.

Bathroom and Kitchen

- > Teach children not to run around with forks, knives, combs or toothbrushes.
- > Keep detergents, cleaning supplies, nail polish remover, mouthwash and makeup in locked cabinets or out of reach.
- > Set a good example by wearing eye protection when using ammonia-based cleaning supplies.

Bedroom

- > Keep clothes hangers in the closet.
- > Don't allow children to play with small, pointed or sharp toys or objects in bed.
- > Don't allow young children to use combs, brushes or hairspray unless you watch or help them.

Play Area

- > Teach children to put toys away.
- > Keep toys for older kids away from younger kids.



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Eye Safety Tips for Your Home—Continued

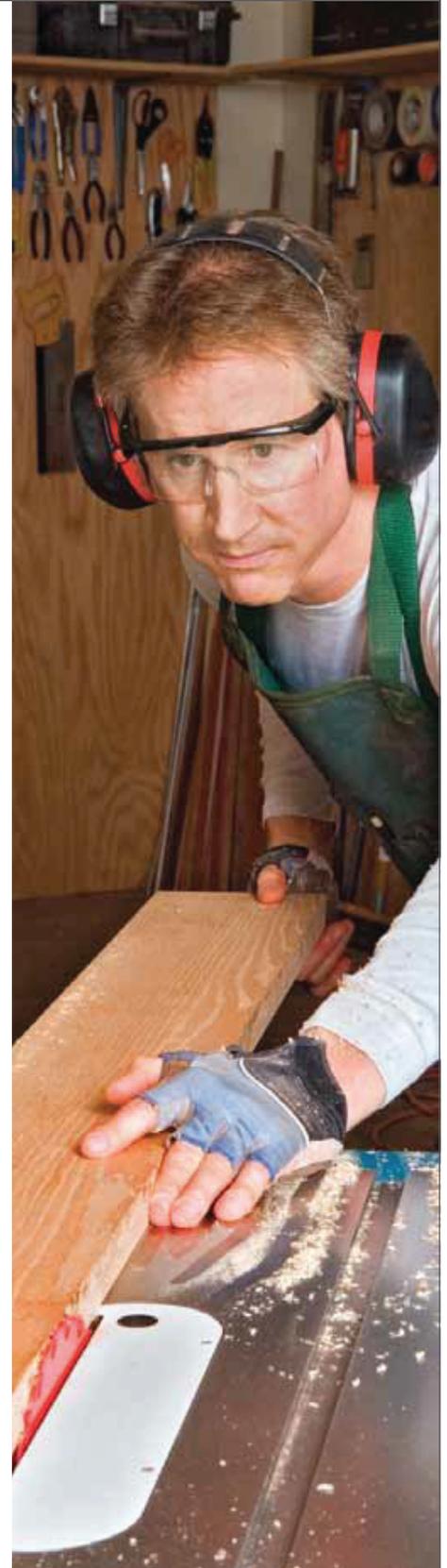
- > Don't give toys with small parts to young children. Young kids tend to put things in their mouths, increasing the risk of choking.
- > Tell children not to throw toys or objects at each other.
- > Repair or throw away broken toys. Take recalled toys back to the store where you bought them.

Workshop/Basement

- > Place nails, glue, screwdrivers and other tools out of reach of children.
- > Keep younger children away from work areas where power tools are being used.
- > Set a good example by always wearing eye protection while working on projects.
- > Prompt others who enter the work area to wear eye protection.

Backyard Games

- > Teach kids to wear the right eye protection when playing baseball, basketball or other types of contact sports. Call us at 800.331.2020 to get a list of the recommended eyewear for specific sports.
- > Make sure children who wear prescription glasses play contact sports with proper eye protection.
- > Work together with your kids to create a list of eye safety rules they should follow when they are playing.



Trick-or-Treat Tips for Making Halloween Safe



Prevent Blindness
211 West Wacker Drive
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Chicago, Illinois 60606
800.331.2020

Halloween should be a fun time that your child remembers for years to come. Every year, there are several hundred eye injuries related to costumes and masks treated in U.S. hospital emergency rooms. There are many things you can do to ensure your child enjoys a safe Halloween and prevent a night of treats from turning into a night of tragedy.

Costumes and Safety

- > Avoid costumes with masks, wigs, floppy hats or eye patches that block vision.
- > Tie hats and scarves securely so they don't slip over children's eyes.
- > Avoid costumes that drag on the ground to prevent tripping or falling.
- > Avoid pointed props such as spears, swords or wands that may harm other children's eyes.
- > Wear bright, reflective clothing or decorate costumes and bags with reflective tape/patches.
- > Carry a bright flashlight to improve visibility.
- > Do not ride a bike/scooter/skateboard or roller blade while wearing a costume.
- > Obey all traffic signals—pedestrian and driver.
- > Younger children should go with an adult while trick-or-treating around the neighborhood. Older children should trick-or-treat in groups.
- > Use common sense. Never dart out between parked cars or hidden corners such as alleys. Avoid streets under construction. Don't trick-or-treat in busy commercial areas or where there is heavy traffic.
- > Go trick-or-treating in daylight, as it is safer than going after dark.
- > A safer option is to go to a Halloween party instead of trick-or-treating.



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Trick-or-Treat Tips for Making Halloween Safe—Continued

Cosmetics and Contacts Lenses

- > Wear hypoallergenic makeup. Have an adult apply the makeup and remove it with cold cream instead of soap. Use makeup in place of masks.
- > Cosmetic contacts that make your eyes look like cat's eyes may seem like fun, especially at Halloween. However, these lenses come with the same risks as regular contact lenses. This growing fad may seem harmless, but it is not!
- > Improper use of cosmetic lenses can lead to serious eye complications. These problems include bacterial infections, swelling, eye pain, sensitivity to light, conjunctivitis (pink eye), corneal scratches, corneal ulceration and even permanent loss of sight.
- > Never buy cosmetic contacts without a prescription! Never share your cosmetic contacts with others or use someone else's contacts.
- > Since this fad is popular among teens, be vigilant about older kids' appearance before letting them leave the house. If they are wearing these contacts, ask where they got them.

Treats

- > Inspect all trick-or-treat items for signs of tampering before allowing children to eat them.
- > Carefully inspect any toys or novelty items received by kids age 3 and younger. These may pose a choking hazard. Avoid giving young kids lollipops as the sticks can cause eye injuries.

Decorations

- > Be sure your lawn, steps, porch and front door are well lit and free from obstacles.
- > Keep candles and jack-o'-lanterns away from steps and porches outside, as costumes could brush against them and ignite. Inside, keep them away from curtains and other decorations to avoid causing a fire.



Planning a Trip to the Eye Doctor?

Prevent Blindness America recommends a continuum of eye care for children to include both vision screening and comprehensive eye examinations. All children, even those with no signs of trouble, should have their eyes checked at regular intervals. Any child who experiences vision problems or shows symptoms of eye trouble should receive a comprehensive eye exam by an optometrist or an ophthalmologist. If you are planning to take your child to the eye doctor, here are some helpful tips.

1. Ask your relatives, friends and neighbors if they know the name of an eye doctor who is good with children.
2. Schedule the appointment when your child is not likely to be sleepy or hungry. If your child has a “cranky” time of day, schedule around it.
3. Make a list of your questions and bring it with you. Take notes when speaking to the doctor, so that you can refer to them later.
4. Have a plan ready in case you need to spend time in the waiting room. Bring a favorite storybook, coloring book or small toy that your child can play with quietly. A snack can also help to pass the time.
5. Let your child watch a family member get an eye exam. Have the doctor explain what is being done, step by step, and encourage the child to ask questions.
6. Bring your child’s favorite cuddly toy. The doctor can “examine” the bear or doll and holding a toy may keep little hands off of expensive equipment.
7. Relax. Children look to adults for cues: if you seem nervous, your child may become anxious. A trip to the eye doctor should be fun for both of you.



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Prevent Blindness America Vision Health Resource Center



What is the PBA Vision Health Resource Center?

Prevent Blindness America staffs a toll-free information phone number as a public service to answer your questions about vision problems and eye health and safety.

How can the vision health resource center serve you?

You can receive free information on a wide range of vision-related topics to help you take good care of your sight. Some of the topics include:

- > Adult/older adult eye health and safety
- > Children's eye health and safety
- > Eye diseases
- > Home eye health and safety
- > Sports eye health and safety
- > Training materials
- > Vision research
- > Vision screening
- > Workplace eye health and safety

What kind of publications are available?

Below is just a small sample of the many brochures and fact sheets PBA has to offer to anyone who calls 1-800-331-2020.

- > Age-related Macular Degeneration
- > Amblyopia (Lazy Eye)
- > Battery Jump-Start Sticker
- > Cataract
- > Diabetic Retinopathy
- > First Aid for Eye Emergencies Sticker
- > Glaucoma
- > Growing Older with Good Vision
- > Questions on Eye Safety
- > Signs of Eye Trouble in Adults
- > Signs of Eye Trouble in Children
- > Ultraviolet Radiation

Here's how to receive your free information:

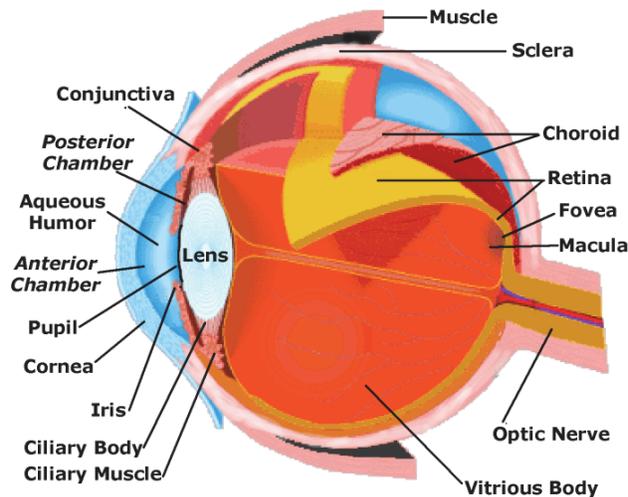
Call toll-free 800.331.2020 between 8:30 am and 5 pm (CST)
Monday through Friday, and press #3 or visit us on the Web at
PreventBlindness.org.



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Glossary



A

Accommodation

Ability of the lens to adjust its shape using the eye's ciliary body for vision at various distances in order to produce a clear image on the retina.

Albinism

Congenital condition that results in partial or total deficiency in melanin pigment often occurring along with extreme sensitivity to light, involuntary eye movements, and visual impairments.

Amblyopia

Commonly referred to as "lazy eye." Reduced vision in the eye not adequately used, which causes a misalignment (crossing) or a difference in focusing between the eyes.

Anterior Chamber

Space in front portion of the eye between the cornea and the iris and lens, which is filled with aqueous humor.

Aqueous Humor

The water-like fluid filling the space behind the cornea and in front of the crystalline lens (the anterior chamber). It is produced by the ciliary body and drains back into the blood circulation through channels in the chamber angle. Its main function is to provide nutrients to the front portion of the eyeball.

Astigmatism

Irregular curvature of the cornea or lens resulting in a distorted image because light rays are not focused on a single point on the retina.

B

Binocular Vision

Coordinated use of the two eyes to see a single fused three-dimensional image.

Blind spot

In testing the visual field, this is the blind area corresponding to the optic disk where the optic nerve fibers exit the eye and where there are no light-sensitive cells.

Blindness

See legal blindness.

C

Cane

Device used to locate and navigate environmental objects (e.g., steps, curbs, streets, classrooms, people, chairs). The cane is long enough to be two steps ahead of the individual who is blind allowing him or her to find obstacles with the cane before getting to the obstacle.

Cataract

Opaque or clouding of the lens that blocks or changes the passage of light through the lens and result in blurry, hazy, or distorted vision. Cataracts can be present at birth or soon after (congenital cataract) or occur as the result of injury (traumatic cataract).

Central Field Loss

Loss of sight that results in difficulty seeing a vertical object presented at the midline of the body.

Central Visual Field

The area of objects in space seen without moving the head or eyes; corresponds to an area within 30 degrees of the fixation point (fovea)

Choroid

The middle layer of the eyeball's casing, positioned between the sclera and retina. It contains blood vessels that supply most of the nourishment to the other parts of the eye, especially the retina.

Ciliary Body

The extension of the choroid, connecting with the iris; a ring of tissue between the iris and the choroids consisting of muscles and blood vessels that changes the shape of the lens and manufactures aqueous humor. The ciliary body is connected to the lens by fine fibers called zonules.

Congenital Color Deficiency (color blindness)

Inability to recognize certain colors, primarily red or green, but rarely blue.

Color Vision

Ability to distinguish colors and shades; occurs when the color-sensitive cone cells in the retina properly pick up and send normal color signals to the brain.

Cones

Cone-shaped nerve endings in the retina particularly in the macula area; cone function predominates in daylight with a small pupil allowing one to make out details and shapes, especially colors.

Congenital

Present at birth.

Conjunctiva

The delicate tissue or membrane lining the inside of the eyelids covering the front part of the eye except the cornea.

Conjunctivitis

Commonly referred to as “pink eye”; infection and inflammation of the conjunctiva, usually from an allergy, virus, or bacterium.

Cornea

The clear, dome-shaped “front window” of the eye. The cornea is a lens that bends (refracts) light rays as they pass through. The curvature of the cornea accomplishes about 80 percent of the focusing of the eye.

Cortical Blindness

Condition in which the structure of the eye is normal, but vision is affected as the result of damage to the visual center of the cerebral cortex.

Crystalline Lens

The transparent tissue that acts like a magnifying glass behind the pupil. The crystalline lens flexes when we want to look at something close-up, providing about 30 percent of the eye's total focusing power. The growth and hardening of the lens causes it to lose its flexibility over time, which is why people 45 and older usually need bifocal contacts or glasses, or reading glasses.

D

Degeneration

Tissue changes that make it less able to do its function.

Depth Perception

The blending of slightly dissimilar images from the two eyes for the perception of three dimensional depth.

Diabetic Retinopathy

Changes in the retina due to diabetes, eventually leading to proliferative diabetic retinopathy. If the diabetes is not controlled, small blood vessels that nourish the retina weaken and become blocked or break down.

Diabetic Retinopathy-Proliferative

Formation of scar tissue on the surface of the retina (which can cause retinal tears and detachment) and leaking of blood by the new fragile vessels into the eye (vitreous hemorrhage), all capable of causing severe vision loss or blindness.

Diopter

Metric unit used to denote the refractive error of the eye or lens.

Distance Vision

Ability to distinctly perceive objects at a distance, usually 20 feet.

E

Extraocular Muscles

Consist of six separate muscles that control eye movement. Five of these muscles originate from the back of the orbit and wrap around the eye to attach within millimeters of the cornea. Four of these muscles move the eye roughly up, down, left, and right. Two of these muscles, one of which originates from the lower rim of the orbit, control the twisting motion of the eye when the head is tilted.

Exotropia

Turning outward of one or both eyes.
(See Strabismus for more.)

Esotropia

Turning inward of one or both eyes.
(See Strabismus for more.)

Eyelid

Serves multiple functions. Reflex closure of the eyelids will keep objects out of the eye and lubricate the cornea by distributing fresh tears. The eyelid also limits the light entering the eye.

Eye, The

A complete optical system slightly smaller than a ping-pong ball. The eye is an intricate arrangement of tissues, fluids, nerves, and cells that work together to transform light into the images that we see. Our eyes work as “live cameras” for the brain, gathering up and processing images.

F**Farsightedness (Hyperopia)**

A refractive error in which the focal point for light rays is behind the retina (also called hyperopia); distant objects are seen more clearly than near objects.

Focus

The point at which light rays meet after passing through the cornea and lens; in normal eyes this point is on the fovea of the retina.

Fovea

A small area of the retina composed predominately of cones and responsible for central vision and color vision.

G**Glaucoma**

A progressive disease of the optic nerve resulting in a reduction in the visual field (beginning in the periphery and gradually moving inward) and even blindness; most significant risk factor is elevated intraocular pressure (IOP). Rare in infants and children.

H

Hemianopsia

Loss of either the right or left half of the visual field. Can result from a stroke and traumatic brain injury.

Hereditary

Appearing in, or characteristic of, successive generations; individual differences in human beings passed from parent to offspring.

Hyperopia (Farsightedness)

See farsightedness.

I

Incidence

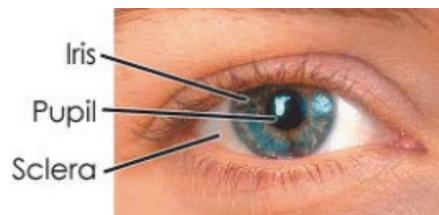
Number of new cases of a particular problem or disease that occurs within a period of time.

Intraocular Pressure (IOP)

The pressure within the eyeball that gives it a round firm shape, regulated by the rate at which aqueous humor enters and leaves the eye.

Iris

The doughnut-shaped ring of pigmented tissue in front of the lens that controls the size of the opening at its center. The iris opens and closes to regulate the amount of light entering the eye.



L

Legal Blindness

Central vision acuity does not exceed 20/200 in the better eye with correcting lens; field of vision no greater than 20 degrees in its widest angle; visual acuity of 20/200 means that a person can see at a distance of 20 feet that one with “normal” sight can see at 200 feet.

Lens (Crystalline Lens)

The transparent structure located immediately outside of the iris of the eye. Changes shape (flattens and thickens) to focus the incoming light from objects far away and near.

Low Vision

20/50 or less vision. Unable to perform basic visual tasks with conventional optical correction. Visual functioning can be increased through the use of optical aids and environmental modifications.

Low Vision Aids

Powerful optical devices useful to persons with a vision impairment that is not successfully corrected by the usual prescription lenses.

M

Macula

Rod free area in the middle of the retina responsible for distinguishing fine details and colors. At its center is the fovea, a tiny pit containing the highest concentration of cones and providing the ultimate focal point for the optical system.

Macula Lutea

Small yellowish area, slightly lateral to the center of the retina that is the region of maximum visual acuity and consists primarily of retinal cones.

Macular Degeneration (Juvenile or Age-Related)

Degenerative disease in which central vision is affected. The macula, the central portion of the retina, is progressively destroyed. Associated with arteriosclerosis, hereditary factors, or eye trauma.

Myopia (Nearsightedness)

See nearsightedness.

N

Nystagmus

Involuntary, rhythmical, repeated oscillations of one or both eyes, in any or all fields of gaze with reduced acuity caused by the inability to maintain steady fixation.

Nearsightedness (Myopia)

Also called myopia; a refractive error of the eye where the image of a distant object (more than 20 feet) is formed in front of the retina and cannot be seen distinctly; near objects are seen more clearly than distant objects.

Near Vision

The ability to perceive objects distinctly at normal reading distance (usually about 14 inches from the eye).

Night Blindness

Condition in which sight is good by day but deficient at night and in any faint light.

O

Ocular Mobility

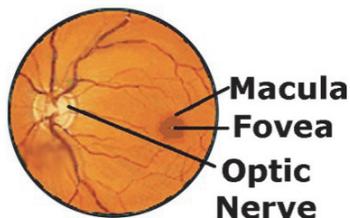
Functioning of the eye muscles that enable the eyes to move together in all directions.

Ophthalmologist

A physician (doctor of medicine or doctor of osteopathy) who specializes in the comprehensive care of the eyes and visual system in the prevention of eye injury and disease. The ophthalmologist has completed four or more years of college premedical education, four or more years of medical school, one year of internship and three or more years of specialized medical and surgical training and experience in eye care. The ophthalmologist is a physician who is qualified by lengthy medical education, training, and experience to diagnose, treat and manage all eye and visual system problems and is licensed by a state board to practice medicine and surgery. The ophthalmologist is the medically trained specialist who can deliver total eye care: primary, secondary, and tertiary care services and diagnose general diseases of the body.

Optic Atrophy

Deterioration of the optic nerve causing severe vision loss and even blindness.



Optic Disk

Head of optic nerve; formed by the meeting of all retinal nerve fibers in the retina.

Optic Nerve

Special nerve of sight beginning in the retina as the optic disk. Contains visual information from the eye and has 1.2 million nerve fibers that carry impulses from the rods and cones of the retina to the brain resulting in visual images. The sheath around the optic nerve is continuous with that of the brain and the nerve connects directly into the brain.

Optician

Professionals in the field of designing, finishing, fitting, and dispensing of eyeglasses and contact lenses, based on an eye doctor's prescription. The optician may also dispense colored and specialty lenses for particular needs as well as low-vision aids and artificial eyes.

Optometrist

Health care professional trained and state licensed to provide primary eye care services. These services include comprehensive eye health and vision examinations; diagnosis and treatment of eye diseases and vision disorders; the prescribing of glasses and contact lenses, low vision rehabilitation, vision therapy and medications; the performing of certain surgical procedures; and the counseling of patients regarding their surgical alternatives and vision needs as related to their occupations, avocations, and lifestyle. The optometrist has completed pre-professional undergraduate education in a college or university and four years of professional education at the college of optometry, leading to the doctor of optometry degree.

P**Partially sighted**

Central vision acuity is between 20/70 and 20/200 in the better eye with correction.

Peripheral Vision

The ability to perceive the presence of motion or the color of objects outside the direct line of vision.

Photoreceptors

Light-sensitive cells (cones and rods) in the retina that react to the specific wavelengths of light and prompt nerve impulses.

Presbyopia

Decreased elasticity of the lens due to advancing years or old age, which moves the near point of vision farther from the eye so it is difficult to focus on near objects.

Prevalence

Total number of cases of a problem or disease in the population at a given time.

Pupil

The opening in the center of the iris that appears as a black dot. In dim light, the iris enlarges the pupil, increasing the amount of light entering the eye and improving vision. In bright light, the iris reduces the pupil's size to decrease entering light and avoid eye damage. The pupil looks black because it is very dark inside – that is, almost no light is reflected back out.

Pupil Constriction

Decrease in the size of the pupil due to an increase in incoming light or an increase in lens accommodation.

Pupil Dilation or Dilatation

Increase in the size of the pupil due to a decrease in incoming light or a decrease in lens accommodation.

R**Refraction**

Measurement of the eye to determine refractive errors and the need for prescription glasses.

Retina

Innermost layer of the eye containing light-sensitive nerve cells and fibers that connect with the brain through the optic nerve and are nourished by a network of blood vessels. The retina contains receptor cells called rods and cones that convert light into electrochemical impulses sent to the brain. Rods aid vision in dim light, while cones help with color perception.

Retinal Blood Vessels

Supply oxygen to the inner lining of the eye (retina).

Retinal Detachment (RD)

Retina separates from the pigment layer as a result of trauma to the eye, aging, or inflammation of the interior of the eye.

Retinitis Pigmentosa

Inherited, bilateral deterioration of the retina beginning in childhood and progressing through middle age. Manifested by night blindness and gradual loss of peripheral vision, eventually resulting in tunnel vision or total blindness.

Retinopathy

Any diseased condition of the retina, principally one that is non-inflammatory.

Retinopathy of Prematurity

Changes in the blood vessels of the eye's retina that occur soon after birth in some premature infants.

Rods

Light sensitive nerve endings in the retina that work best in darkness or dim illuminations.

S**Sclera**

The "white of the eye." Along with the cornea, it forms a tough protective coating. The sclera continues back over the optic nerve to join with the outer covering of the brain.

Severe Visual Impairment

Inability to read ordinary newspaper print even with the aid of glasses, and impairment indicating no useful vision in either eye; includes those who are legally blind.

Strabismus

Vision impairment that prevents an individual from maintaining proper eye position. The individual experiences an inability to attain or maintain binocular vision due to a muscle imbalance in one eye, causing that eye to turn inward, outward, upward, or downward.

T**20/20 Vision**

The ability to correctly perceive an object or letter of a designated size from a distance of 20 feet; normal visual acuity.

Tunnel Vision

Constriction of the visual field, resulting in the loss of peripheral vision.

U

Usher's Syndrome

A dual sensory condition. Hearing loss at birth and progressive visual loss from retinitis pigmentosa beginning by age 10.

V

Vitreous Humor

The clear, jelly-like substance filling the otherwise empty space behind the crystalline lens. It serves primarily to keep the retina pressed against the inside wall of the eyeball. It tends to liquefy with age.

Visual Acuity

Measurement of the ability of the eye to perceive the shape of objects in the direct line of vision and to distinguish detail; generally determined by finding the smallest symbol on an eye chart that can be recognized.

Visual Cortex

The sensory area of the occipital lobe of the brain's cerebral cortex and concerned with the sense of sight.

Visual Field

The area in which objects are visible to the eye at a given instant without moving the eyes. Normally an arc of 150 degrees from right to left and 120 degrees up and down.

Visual Impairment

A generic term, which refers to a wide range of visual problems; difficulty seeing with one or both eyes even when wearing glasses.

Visual Pathway

The path of electrical impulses from the eye to the brain, resulting in the sense of vision.

Vitreous Body

Transparent colorless mass of soft, gelatinous material filling the globe of the eye between the lens and the retina.

Vitreous Humor

The transparent mass occupying the posterior compartment (the space between the crystalline lens and the retina of the eyes).



Affiliates and Regional Operations

As of 2/24/15

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Resource Organizations

American Academy of Ophthalmology

655 Beach Street
San Francisco, California 94109-1336
Tel: (415) 561-8500
Fax: (415) 561-8533
<http://www.aao.org>
Contact: Annamarie Harris, (415) 561-8525
E-mail: eyemd@ao.org

American Optometric Association

1505 Prince Street, Suite 300
Alexandria, VA 22314
Tel: (703) 739-9200
Toll Free: 1-888-396-EYES (3937)
<http://www.aoa.org>
Contact: John C. Whitener, OD, MPH
E-mail: AmOptCOR@aol.com

Association for Education and Rehabilitation for the Blind and Visually Impaired

4600 Duke Street, Suite 430
P.O. Box 22397
Alexandria, VA 22304
Toll-free: 1-877-492-2708
Phone: (703) 823-9690
Fax: (703) 823-9695
<http://www.aerbvi.org/>

EyeCare America

655 Beach Street
San Francisco, CA 94109-1336
Tel: (415) 561-8500
Fax: (415) 561-8567
<http://www.eyecareamerica.org>
Contact: Betty Lucas, (451) 447-0381
E-mail: blucas@ao.org

The Glaucoma Foundation

116 John Street, Suite 1605
New York, NY 10038
Tel: (212) 285-0080
Toll Free: 1-800-GLAUCOMA (Hotline)
<http://www.glaucoma-foundation.org>

Glaucoma Research Foundation

490 Post Street, Suite 1427
San Francisco, CA 94102
Toll-free: 1-800-826-6693
Phone: (415) 986-3162
Fax: (415) 986-3763
<http://www.glaucoma.org/>
E-mail: info@glaucoma.org

InFOCUS

327 Tealwood Drive
Houston, TX 77024
(713) 468-3040
<http://www.infocusonline.org>
Contact: Barbara Kazdan
E-mail: infocus@houston.rr.com

Indian Health Service

Parklawn Building, Room 6-35
5600 Fishers Lane
Rockville, MD 20857
Phone: (301) 443-3593
<http://www.ihs.gov/>

Lighthouse International

111 East 59th Street
New York, NY 10022
Toll-free: 1-800-829-0500
Phone: (212) 821-9200
Fax: (212) 821-9705

TDD: (212) 821-9713
<http://www.lighthouse.org>
E-mail: info@lighthouse.org

Lions Clubs International

300 W 22nd Street
Oak Brook, IL 60523-8842
Tel: (630) 571-5466
Fax: (630) 571-1692
<http://www.lionsclubs.org>
Contact: Deborah O'Malley
E-mail: domalley@lionsclubs.org

Macular Degeneration Partnership (MDP)

8733 Beverly Boulevard, Suite 201
Los Angeles, CA 90048
Tel: (310) 423-6455
Toll Free: 1-888-430-9898
<http://www.amd.org>
Contact: Judith Delgado
E-mail: judith.delgado@cshs.org

National Association for Parents of Children with Visual Impairments

P.O. Box 317
Watertown, MA 02471
Toll-free: 1-800-562-6265
Phone: (617) 972-7441
Fax: (617) 972-7444
<http://www.spedex.com/napvi>

National Association for the Visually Handicapped

22 West 21st Street
New York, NY 10010
Phone: (212) 889-3141 or 212-255-2804
Fax: (212) 727-2931
<http://www.navh.org>
E-mail: staff@navh.org

3201 Balboa Street
San Francisco, CA 94121
Phone: (415) 221-3201
Fax: (415) 221-8754
E-mail: staff@navh.org

National Diabetes Education Program, National Institutes of Health/Centers for Disease Control and Prevention

National Institutes of Health/Centers for Disease Control and Prevention
Building 31, Room 9A04
31 Center Drive
Bethesda, MD 20892
Phone: (301) 496-6110
Fax: (301) 496-7422
<http://ndep.nih.gov>

National Eye Institute (NEI)

31 Center Drive MSC 2510
Bethesda, MD 20892-2510
Phone: (301) 496-5248
<http://www.nei.nih.gov>
Contact: Rosemary Janiszewski
E-mail: rjaniszewski@nei.nih.gov
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Herndon, VA 20170
Phone: (703) 437-8780
Fax: (703) 437-0727
E-mail: oa@oaa.org

Prevent Blindness

211 W. Wacker Drive
Chicago, IL, 60601
Tel: (800) 331-2020
Fax: (847) 843-8458
<http://www.preventblindness.org>
E-mail: info@preventblindness.org

Sight & Hearing Association

674 Transfer Road

St. Paul, MN 55114-1402

Tel: (651) 645-2546, ext. 12

<http://www.sightandhearing.org>

Contact: Julee Sylvester

E-mail: jlps@sightandhearing.org

VISTAKON, Division of Johnson & Johnson Vision Care, Inc.

7500 Centurion Parkway

Jacksonville, FL 32256

Telephone: (904) 443-1829

Toll Free: 1-800-876-6622

<http://www.acuvue.com>

Contact: Stan Yamane

E-mail: syamane@visus.jnj.com

VSP (Vision Service Plan)

Vision Service Plan

3333 Quality Drive

Rancho Cordova, CA 95670

(916) 463-7221

(916) 463-7591 Fax

<http://www.vsp.com>

Contact: Pam Lapinski

E-mail: pamla@vsp.com

For descriptions of each organization see:

http://www.healthyvision2010.org/about_hv/c_members.asp

Evaluation Form

Your comments about this eye health and safety curriculum are very important to us. Please take a moment to complete this evaluation and mail it to Prevent Blindness Ohio, 1500 West Third Avenue, Suite 200, Columbus, OH 43212-2874. You can also fax this to: 614.481.9670. Thank you.

What grade level and how many students participated in the program?

Grade: Pre-K K 1 2 3 4 5 6

Number of Students: _____

Were the materials in this program appropriate for the grade level?

Yes No

Please rate the following on a 5-point scale, “1” being very valuable and “5” not valuable.

	Very Valuable	Valuable	Somewhat Valuable	Minimal Value	Not Valuable	N/A
	1	2	3	4	5	
Lesson 1: The Gift of Sight						
Lesson 2: The Eye and How We See						
Lesson 3: Glasses, Why Some People Need Them						
Lesson 4: A World Without Sight						
Lesson 5: Taking Care of Our Eyes						
Activities						
Pre and Post Tests						
Supplemental Information						
Resources						
Overall Program						

Additional comments: _____

Suggestions for improvement: _____

Inclusion of your contact information is optional. However, if you complete the contact information we will send you a special gift to express our thanks for your input.

Name: _____

School/Organization: _____

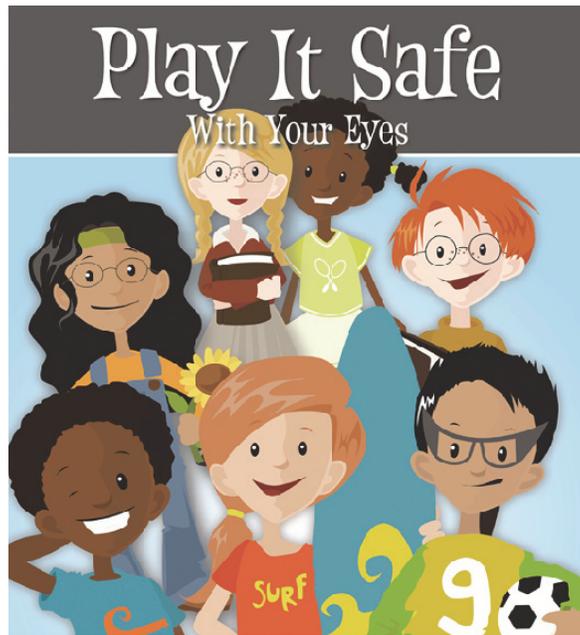
Street Address: _____

City/State/Zip: _____

Work Phone: _____

Alternate Phone: _____

Email Address: _____



This certifies that

has successfully participated in *Play It Safe With Your Eyes!*

Teacher: _____

Date: _____

