Developing Your Children’s Vision
A Guide for Parents of Infants and Young Children with Vision Impairment

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Signs and Symptoms of Vision Problems

This checklist can help you identify eye problems in your child:

**Behavior**
- Rubs eyes frequently
- Does not appear to focus with central vision
- Turns or tilts head when looking at detail
- Covers or closes an eye when looking at detail
- Avoids close work or becomes tired after close work
- Can see better during the day than at night
- Complains of tired eyes
- Squints eyes
- Sits very close to the television
- Has difficulty walking and running; appears clumsy

**Appearance**
- Eyes shake or wander randomly
- Eyes are not able to follow parent’s face
- Pupils of the eyes are excessively large or small
- Pupils of the eyes are not black; they appear to have a cloudy film on them
- Eyes do not appear to be evenly lined up; they cross or turn outward

Children’s Program at
The Center for the Partially Sighted

The Children’s Program at The Center for the Partially Sighted is devoted exclusively to helping children who are partially sighted maximize their remaining sight, even if they are legally blind. We help these children use their sight to function successfully... in the home, in the classroom and on the playground.

The Center provides information, treatment and support to the families, teachers and therapists of children who are visually impaired.

**Services include:**
- Functional Vision Assessment
- Prescription Testing
- Vision Stimulation Intervention
- Design and Fitting of Low Vision Aids
- Training in the use of Low Vision Aids
- Family Counseling and Support
- Referrals to Community Resources
Early Intervention

The purpose of this brochure is to provide parents, teachers and therapists with critical information to help the child who has a vision impairment. Children born with impaired sight do not know how they are supposed to see the world. Those who develop vision problems as young children may not have the language to communicate information that could help detect these problems. Early professional intervention can make a major difference in your child’s development.

Vision is…

…but more than 20/20

Having 20/20 eye sight is not necessarily perfect vision. The standard eye chart used in the offices of doctors and school nurses measures how well a child can recognize a black letter from a distance of twenty feet with one eye. But this test detects less than 20% of children’s vision problems. It does not evaluate how well a child performs on reading distance, eye-hand coordination, tracking skills (following movement), eye teaming skills (how well both eyes work together) and visual processing skills. Vision is the ability to take in, process and understand visual information. It includes eyesight, eye movement skills, eye teaming, focusing, depth perception, color vision, peripheral vision, visual perception and processing, and the ability to integrate all of this information with our other senses.

...A Learned and Developed Skill

Your child’s vision is a learned and developed skill that requires stimulation and experience. Like learning to walk and talk, children must learn how to use their vision. The visual system involves much more than the eyes. The visual system interacts with the muscles of the body to develop reaching, crawling, grabbing and walking. In fact, two thirds of the functions of the brain are associated with vision. Patterned targets are required to allow the visual cells of the brain to develop. Without patterned stimulation, these areas of the brain do not develop the ability to process visual information. Because vision requires stimulation, problems that occur in the eye or in the visual areas of the brain can affect your child’s vision. Examples of these problems include: eye diseases, such as congenital cataracts, retinopathy of prematurity, ocular albinism, optic nerve and retinal disease; and neurological abnormalities to the visual pathways and visual centers of the brain.
Vision Stimulation Intervention

Vision stimulation intervention activities can help children use their remaining vision more effectively. The theory is that by performing these activities, the visual areas of the brain are stimulated to maximize the development of vision. They are not exercises that strengthen eye muscles, or cure eye diseases or abnormalities to the brain. The activities presented in this brochure are to help stimulate the development of your child’s vision. Vision stimulation intervention should not be confused with vision therapy. Vision therapy is a program provided by eye doctors to treat specific eye conditions, such as strabismus or amblyopia. In contrast, vision stimulation is a program that can be performed by parents to maximally develop a child’s vision during the first 5 years of life.
Vision Affects the Development of Children

Research has taught us that vision affects how children develop. Children with vision problems may not be able to use their vision to make eye contact, socially bond with family members, and also may have difficulty developing the sense of day versus night. Because vision also serves as a learning sense, children with visual impairment may not learn to perform many tasks as quickly as a child with full vision because they cannot learn by mimicking the behaviors of others. A child with impaired sight may be delayed in sitting, crawling, walking, talking, or learning to read and write. For these reasons, it is critical that you help to develop your child’s vision.

The Team Approach to Vision Care

Children with vision impairment benefit from a team of vision care professionals—ophthalmologists and optometrists. Each specializes in different areas of vision and has specific training that is unique to each profession.

The Developmental Low Vision Exam performed by a low vision optometrist evaluates how children use their remaining sight and determines if there are devices to help children reach their full visual potential. These two eye care professionals work together to insure that the child has the best care possible. Ophthalmologists are physicians who specialize in the medical and surgical treatment of eye diseases. When a child has an eye disease that requires surgery or a combination of surgery and medical treatment, an ophthalmologist is needed.

Optometrists specialize in the functional implications of vision problems and the non-surgical treatment of these problems. They have extensive training in the use of glasses, contact lenses, prisms, filters, and low vision aids. In California and 41 other states, optometrists prescribe medications and drugs for eye conditions. Both ophthalmologists and optometrists are required by law to diagnose eye diseases and vision problems.
Things To Remember

At this age, children are primarily interested in high contrast objects. Their ability to see color is not fully developed yet so they may not be interested in looking at pastels or light colored objects. Children are not visually interested in looking at objects that are too far away. For example, they may not look at room borders on the top of walls.

Things To Do

» Stimulate your child’s vision by placing high contrast objects, such as black and white stuffed animals, just beyond her reach.
» Decorate the room to be visually stimulating by using high contrast mobiles, toys and fabrics.
» Use black and white or red and white patterns.
» Keep the room well lit. At night, leave on a small night light with a 25 watt bulb so that if your child wakes up the light will provide stimulation.
» Move the crib to different positions in the room so that she will experience different views of the room.
» Talk to your baby when you enter the room so she will know you are there.
» Remind family and friends to talk to her when they approach. If she doesn’t know you are there, your child may become startled if picked up too quickly.
» Position yourself in your child’s line of sight. Once she focuses, move your face so that she will follow your face with her eyes. This helps to develop eye tracking movement skills.
» Use brightly colored tape around your child’s bottle to create a high contrast target.
» Move the bottle slowly from side to side to encourage her to track the bottle with her eyes. When she does follow the bottle, allow her to drink.
» Using a “Mini Mag Lite” or variable beam flashlight from the American Printing House for the Blind, Inc. with colored lenses inserted on top of the light, shine the light on your child’s body from different angles. Move the light to encourage her to follow the light. This will promote eye tracking movement skills.
» Use the Fisher Price Lite Box to project an evenly lit source of light to attract her visual interest. Use colorful, high contrast transparent patterns on the Lite Box and position it 16 inches away from your child’s eyes. You can also place toys and household objects on the Lite box to encourage your child to reach for and grab the object.
» Use shimmering materials, such as pompoms or reflective mylar paper, to present visual stimuli in front of your child.

Have a complete ophthalmological assessment so that your child will receive any medical treatments that may be necessary. If needed, glasses should be prescribed by a pediatric or low vision optometrist.
One to Two Years

Things to Do

» Encourage reaching for toys and objects that your child enjoys, such as a pacifier, bottle or rattle.
» Encourage the development of visual spatial relations skills by allowing her to play with blocks, such as Duplo blocks.
» Continue to stimulate the visual areas of the brain with high contrast toys, pompoms, flashlights, and brightly colored fabrics.
» Introduce toys that create a visual response after the child touches it, such as a Jack in the Box, or toys that have flashing lights or moving parts when a button is pushed.
» Roll balls so that she can understand that by pushing the ball, it will go away and look smaller as it moves away.
» Play card games that involve matching or putting cards in order.
» Encourage your child to touch, hear and taste those objects that she sees.
» Allow her to explore her surroundings. The ability to roam and move freely is valuable experience for your child.
» Introduce the names of objects that your child looks at and plays with. This is a time that the development of language occurs.
» The iPad is one of the most versatile tools to stimulate a child’s vision. There are many applications that will help a child to focus on patterns and colors and also develop a child’s eyehand coordination skills. For a list of specific applications and techniques, please visit our website.

Things To Remember

During this period, children begin to explore objects located beyond arm’s reach. This promotes the development of walking and running. Eye-hand coordination skills also develop. Children may learn to manipulate objects with their hands. Children may now learn how objects fit together. Shape, size, and form perception skills begin to develop. They may have an interest in seeing objects beyond three feet. This interest has often been associated with the development of crawling, reaching and walking.

Schedule your child’s second year ophthalmological assessment.
Three to Five Years

Things To Remember

Children develop pre-reading and pre-writing skills at the age of 4. This is a period to develop visual skills that can be used for reading and writing. One of the most important skills for reading is tracking from left to right. Language skills are also developed during this period. >>

Schedule your vision assessment with a low vision specialist to determine the level of functional vision before the child starts preschool or kindergarten.

Things to Do

» Encourage top to bottom and left to right progressions by drawing lines on a chalkboard.
» Encourage visual recognition by playing with magnetic letters and numbers.
» Develop your child’s memory by playing card and word games.
» Teach him to move his eyes in a left to right reading pattern by placing your finger on each word as you read it. Later, place his finger on each word that you read.
» Use eye-hand coordination games such as pegboard or Lite Bright to teach eye tracking. Moving the game pieces in a left to right pattern teaches the tracking pattern needed for reading skills.
» Encourage your child to look at a picture and to name the object.
» Show him pictures and photographs to help develop the association of pictures with real objects.
» Allow him to run and develop eye-hand and eye-foot coordination. Allow him to kick a beach ball or tap a balloon from one place to another.
» Work on puzzles and blocks so that the child can see that parts will form a whole object. Consider using toys such as pegboards, matching card games, puzzles, dominoes, and Mega or Duplo blocks.
Five to Eight Years

**Things To Do**

» In the classroom, make sure that your child is positioned to make the most of his visual potential. Some children will do better near the front of the room while others may benefit from sitting on one side or in the back. The placement depends on his visual condition. A low vision specialist can make recommendations.

» Lighting can make a big difference. Find out what level of light your child requires and provide the best type and level of lighting for him. Some children require low levels of fluorescent lighting while other children require high levels of halogen lighting for reading.

» If your child has the visual skills to read, determine what type style, size and spacing he reads most easily. The type on this page is 12 point; most people with impaired vision need 16 point or 18 point type.

» Provide your child with the most appropriate work station. Some children will require the use of a drafting table or slant desk while others require assistive technology, such as a Closed Circuit Television (CCTV), and/or specialized computer software.

» Provide the student with the ideal low vision aids for seeing the chalkboard and reading.

» Evaluate the effectiveness of specialized low vision aids, including closed circuit televisions, computer scanners, and voice-activated technology.

» Make sure the child wears protective eye wear when playing outdoors. This will reduce the risk of trauma to the eyes during recess and play.

» Your child may not require special visual aids or visual assistance during the first and second grades because the text that he learns from is relatively large. During this period, your child learns to read.

**Things To Remember**

This is an important period with respect to schooling. You will need help from your low vision specialist and other professionals who work with your child to carry out many of the following suggestions. Children should be assessed to determine whether they will require specialized text or books to learn to read. In some cases, a child may require large print books, while in other cases, Braille would be a more efficient method of reading. A developmental low vision optometrist can determine whether the child has the visual skills necessary to read while an educator can assess the mental skills needed for reading.
A Developmental Low Vision Exam is performed by a low vision specialist to determine the extent of your child’s sight and how well the child is using that sight. A Developmental Low Vision Exam should check central and peripheral sight, scanning techniques, glare and contrast sensitivity, as well as a range of other visual skills. The following is an example of a report by the Center’s Pediatric Developmental Optometrist to use as a guide when your child is evaluated.

Jaymie T. is a four-year-old girl, diagnosed with retinopathy of prematurity by her ophthalmologist. She weighed one pound and thirteen ounces at birth, 26 weeks into gestation. Jaymie also has cerebral palsy and receives speech, physical and occupational therapies. She takes Tegritol to control seizures and has not had a seizure in over two years. Her mother wanted to learn how well Jaymie uses her vision and whether she has the vision necessary for reading, writing and performing other academic tasks in her preschool.

**Functional Vision**
My examination confirmed the diagnosis of retinopathy of prematurity, a condition affecting the retina, the tissue inside the eye that collects visual information and sends it to the brain. The retina is not fully developed until 32 weeks of gestation but Jaymie was born prior to this period. Jaymie, however, has a very high degree of functional vision. She uses her vision to locate toys in our office and to find her way from one room to another. Jaymie did not use her hands to feel her way through the Center. She makes excellent eye contact and uses her vision to observe the behaviors of people around her.

**Distance Clarity of Sight**
Like many children with her condition, Jaymie has a high degree of nearsightedness which affects her ability to see distant objects clearly. At the present time, Jaymie’s distance sight measures 20/400 in each eye without glasses. This suggests that she can identify a symbol 7 inches high from a distance of twenty feet. I have prescribed glasses for Jaymie to wear for all distance activities, including walking, watching television, and playing outdoors. With the new prescription, her sight improves to 20/200, suggesting she can identify a letter 3.5 inches from a distance of twenty feet.

**Recommendations**
- Position Jaymie in the front portion of the classroom.
- Remind Jaymie to wear her glasses for outdoor activities.
- Use bold chalk when writing on the chalkboard.

**Reading Clarity of Sight**
Jaymie has excellent sight at distances closer than five feet. She can identify symbols as small as 10 point type size without glasses. I do not recommend glasses for Jaymie when she performs near work, such as reading, writing, crafts, or working on the computer.

**Recommendations**
- Allow Jaymie to hold reading material closer to her eyes.
- Remind her not to wear her glasses for reading or writing.
- Consider the use of larger print text, such as 18 point type.
- Use a telescoping computer monitor arm to place the screen eight inches from her eyes.
Peripheral Vision
Jaymie has some difficulty seeing objects in her upper field of vision. This may affect her ability to see objects like cabinets or branches that are at a level higher than her head. She may also have difficulty seeing her teacher when sitting on the floor during “circle time.”

Recommendations
» Present visual items in her lower field of gaze.
» Introduce scanning training so that Jaymie will learn to look above her head when she walks.
» Consult with an orientation and mobility specialist for training in the use of a cane.

Eye Movement Skills
Jaymie is able to move her eyes fully in all fields of gaze. However, her left eye crosses or turns inward when she reads with her distance glasses, a condition called esotropia. Without her glasses, her eye does not cross. Jaymie has an eye teaming problem that can affect her ability to track as she learns to read. It causes her to see double. I do not recommend surgery for Jaymie at this time. She is able to control her eye teaming problem very well when she does not wear her glasses. In the future, bifocal spectacles may be considered as her academic demands require more precise sight to copy from the chalkboard to her paper. At the present time, I am concerned that bifocals may affect her balance and mobility.

Color Vision and Sensitivity to Glare
Jaymie has a color deficiency that affects her ability to discriminate colors of similar hue, such as red from orange or pink. She is also sensitive to glare and bright light.

Recommendations
» Avoid color coding schemes involving pastels or colors of similar hue. Use primary colors.
» To avoid glare, position Jaymie so that her back faces windows and doors.
» Jaymie may benefit from wearing a hat or visor when outdoors. Her prescription glasses will automatically tint when she is outdoors.
» Try to use a chalkboard rather than dry eraser boards.
» When using a computer, select a dark background with lighter letters, such as a blue background with white or yellow letters.

Summary
Because her distance clarity of sight measures 20/200 with her glasses, Jaymie is legally blind and eligible for those services and benefits for the legally blind. However, her level of functional vision is very high. Jaymie’s vision condition primarily affects her ability to see distant objects clearly. Her near vision is excellent and I believe she has the visual skills necessary to be able to read and write. She is an excellent candidate for optometric low vision aids. When she is five years old, specialized glasses to enhance her distance sight will help prepare her for the academic activities of the first grade. It is important that Jaymie have yearly ophthalmological examinations to assure her eyes remain as healthy as possible. I have noticed some difficulty with her balance and eye-hand/eye-foot coordination that I do not feel are related to her vision and believe that she would benefit from continued physical and occupational therapies. I would like to re-examine Jaymie in one year.

Modification of the Classroom for the Child with Vision Problems
Position the child optimally in the classroom. To reduce glare, have the child’s back towards the window • Provide adequate lighting, preferably full spectrum, fluorescent, or incandescent lighting • Use a slant desk to provide easier head and eye posture • Use bold line paper and felt pen or #1 pencil for writing • Bold chalk on a blackboard is easier to see than a dry erase marker on a white board • Perform most reading and writing activities during the morning • Allow the child to do near work for fifteen minute intervals, taking breaks between • Be sure the child is wearing glasses when recommended • Double spaced sentences are easier to read • Try to be consistent with the font style used • Reduce the amount of visual distraction in the room • Don’t penalize the child with visual problems for poor handwriting • Encourage visual thinking
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