



# Visual Field Loss in Children



It is crucial to have the involvement of qualified vision educators (TVI, O&M) in order to create an effective and individualized instructional plan.

Visual field losses include loss of the right or left half-field (called “hemianopia”) and loss of the lower field. These are caused by damage to different parts of the posterior visual pathway in the brain. Partial field losses may occur in which one quarter (or quadrant) of the field is affected. Field loss can be absolute (no objects seen) or relative (small, dim object not seen). Ideally, visual field loss is tested with a formal device or method that measures the extent or the sensitivity of the person’s peripheral vision. Children may need to be tested informally by observing their eye movements toward small objects in different parts of their visual field.

## READING and PRE-READING ACTIVITIES

A complete **right** or **left field loss** (called “hemianopia”) may affect the scanning eye movements used in reading and thus make reading difficult and inefficient.

We recommend teaching the child with a field loss to systematically scan visual materials during any visual and visual motor tasks. Scanning a page of images should be taught from the left to right and top to bottom. This is intended to “set” a motor habit for reading in English.

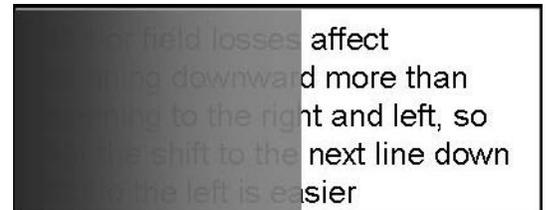
Nevertheless, reading will be more difficult for a person with a right field hemianopia than for a person with a left field hemianopia. This is because we make small, saccadic eye movements to the right as we read across a line of text, which helps us decode sentences. In a complete right field loss, there is no image of a word or letter to the right of fixation and thus no immediate cues to the decoding process. People with right field loss often read with repeated series of right and left saccades in order to decode the text.

- Following along the sequence of images or words with the finger moving under the images may be helpful. Engaging a motor component may be more useful and effective than relying on the child’s gaze to shift attention from left to right.
- A ruler can be placed under the line to help guide the eye.
- A window that masks lines above and below the line being read can be slid along the line while reading.
- For children with right or left field loss, columns of text may be easier to read than whole pages of uncolumned text.

Reading may be more difficult for a person with a right field hemianopia than for a person with a left hemianopia. This is because we make small, saccadic eye movements to the right as we read across a line of text, which helps us decode sentences. In a complete right field loss, there is no image of a word or letter to the right of fixation and thus no immediate cues to the decoding process. People with right field loss often read with repeated series of right and left saccades in order to decode the text.

In a **left field hemianopia**, the problem in reading involves returning from the right end of a line to the left and down to the next line. This can be difficult especially for the beginning reader.

- Using the finger to follow back along the line that was read, and down to the next line may be helpful.
- To guide the eyes to the left and down, a ruler placed along the left edge of the text or an L-shaped guide shifted down to the next line can be used. Color coding of left and right margins may be helpful.



**Inferior field losses** (see specific handout on Inferior Field Loss in Young Children) affect scanning downward more than scanning to the right and left, so that the shift to the next line down in reading probably poses the most difficulty. Recommendations for left field loss above may be helpful for the child with inferior field loss.

- Present visual materials on a slanted surface for viewing. A computer screen is ideal as the surface is vertical.
- The position of the child's face relative to the slanted surface or screen is important. The surface should be biased toward the child's seeing field, upward in the case of an inferior field loss, leftward in the case of right field loss, and rightward in the case of a left field loss.
- Wide arrays and lines of text should be easier to read than columns of text for the child with lower field loss.



*For the young child with any type of field loss, it is important to ensure that the child is aware of the whole array of objects and both pages in a book. This can be helped by encouraging the child to feel the whole object, left, top, right and bottom, and by pointing to both pages, starting from the left one, of course!*

## WRITING AND DRAWING

Children with major field defects may neglect to write or draw on the part of the paper that falls into their non-seeing field. Some children will tilt the paper or the head so that more of the paper falls into the seeing field.

- A slanted surface for writing may be helpful, especially for children with inferior field losses.
- Lined paper will assist writing for the child with a visual field loss.
- A bold dark felt tip pen may provide better writing and drawing than a pencil.
- The child should be helped to become aware of the entire piece of paper on which she/he is writing or drawing.
- Placement of the keyboard for computer use should be designed so that neither the keyboard nor the computer screen is far in the non-seeing field. Placement should be consistent so that the child can anticipate where to look and place the fingers for keying.

Children with field losses often develop head turns or tilts to aid in scanning into the non-seeing field. Consistent head turns/tilts can indicate the child's self-created adaptation to their field loss. The child may tilt a page they are reading or writing on to see the whole surface better. These adjustments should be understood as a helpful and functional adaptation by the child.

## PLACEMENT IN THE CLASSROOM

Seating in the classroom should be where the child's seeing field is maximized for visual materials presented to the class as a whole, and to view the teacher during instruction. So, when facing the front of the classroom and the teacher, the **child with a right field loss** should be seated to the RIGHT facing the front, with the teacher on the child's LEFT. And the **child with a left field loss** should be seated to the LEFT facing front with the teacher on the child's RIGHT.

In a semicircular group, placement of the child with a visual field loss should be guided by the activities and where the child's attention should be directed. If the goal is to attend to the teacher, then the teacher should be well in the child's seeing field. If the goal is to interact with the other children, then the child with a field defect should be positioned so that as many of the other children as possible are in the seeing field.

## MOBILITY

Safety during mobility is a very important consideration for children with visual field losses. Absolute (no objects seen in field of loss) and complete field losses (whole hemifield or entire lower field loss) are particularly detrimental to safe mobility. Children with field loss may have difficulty localizing objects and people at distance, even if their distance visual acuity is normal.

- As in reading and other near tasks, a systematic approach to scanning objects at various distances must be designed and implemented across activities and environments.
- The child's classroom, hallways, stairways, and playground should be evaluated for potential hazards.
- Modifications of the environment should be made to ensure safe movement.
- Marking of crucial features such as stairs and railings, for better visibility may be needed.
- Maintaining consistent placement of furniture and objects will help the child with a field loss learn the environment and make mobility easier (this is true for the home as well as school).
- Introducing the child to distant safety features in the school such as Exit signs is very important.

## ORIENTATION AND MOBILITY INSTRUCTION

It is strongly recommended that the child with a right/left hemianopia or a lower field loss receive a comprehensive evaluation by a certified orientation and mobility (O&M) specialist.

A comprehensive orientation and mobility (O&M) assessment should include, but not be limited to, orientation skills (methods), body and spatial concepts, safety while traveling especially in consideration of walking speed, visual scanning skills, and the ability to judge distance and depth. This should be conducted in familiar, unfamiliar, and visually dynamic environments.

## PRISMS

Prisms placed on glasses may be used to shift the seeing field by a certain amount (15-20 degrees) so that the non-seeing field is moved optically toward the seeing field. This potentially could improve the mobility and other functions of older children who are well motivated and can understand the purpose of the prism glasses. However, the glasses must be fit by a Low Vision Specialist (usually an optometrist) with experience fitting and training children to use prism glasses for this purpose. There are perceptual difficulties that must be overcome in using prism glasses. Training and commitment are essential for successful, continued use and must involve the educational team members.

