

Practical Considerations- Visual-Perceptual Disorders



Presented by
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Learning Objectives

On completion of this module, the participant will be able to:

- 1) Name six different visual-perceptual disorders.
- 2) State how each disorder impacts function.
- 3) List three strategies helpful to a stroke survivor with unilateral spatial neglect.
- 4) Describe one helpful strategy for three other perceptual disorders.

OUTLINE

- 1) Visual Disorders
- 2) Unilateral Spatial Neglect
- 3) Other Perceptual Disorders
- 4) Case Study



Visual Disorders

The muscles that move the eyes are innervated by several cranial nerves (2 through 6).

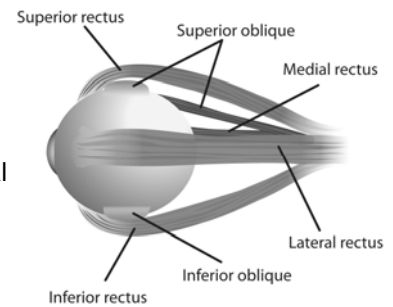


Image courtesy of Communications, Alberta Health Services

Visual Disorders

The visual pathway is extensive and injury may occur at any point.

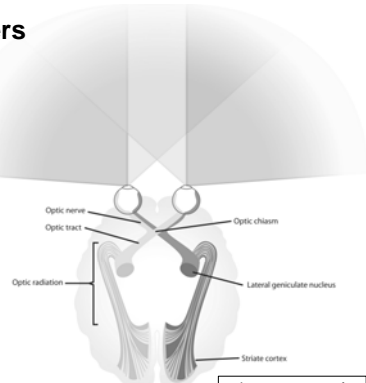


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Visual Disorders

A posterior cerebral artery, basilar artery stroke, or middle cerebral artery stroke may result in visual deficits.

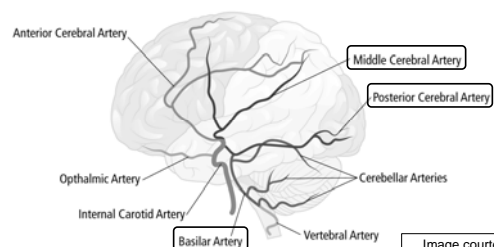
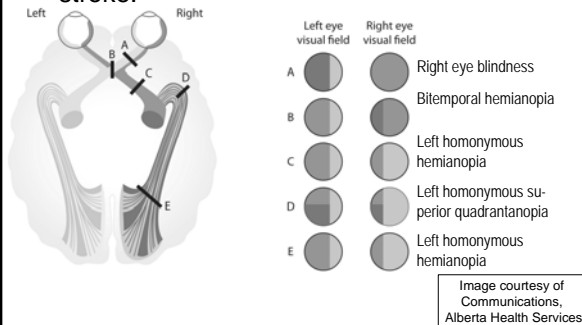


Image courtesy of Communications, Alberta Health Services

Visual Disorders

Visual field deficits relate to the location of the stroke.



Visual Disorders

A wide range of visual disturbances may result from a stroke. Examples include:

- ✦ Double vision (diplopia)
- ✦ Ocular muscle dysfunction
- ✦ Impaired acuity or contrast
- ✦ Visual field deficit

(Khan et al., 2008)

Visual Disorders



- ✦ Use glasses if the patient has them.
- ✦ Encourage the survivor to turn their head to scan the affected visual field. Survivors may scan without cueing.
- ✦ **Position yourself in the intact visual field to communicate.**



TEST YOUR KNOWLEDGE

- 1) **What is the most common type of visual field deficit?**
- a) Homonymous superior quadratonopia
 - b) Homonymous hemianopia
 - c) Bitemporal hemianopia



TEST YOUR KNOWLEDGE

- 1) **What is the most common type of visual field deficit?**
- a) Homonymous superior quadratonopia
 - b) Homonymous hemianopia**
 - c) Bitemporal hemianopia



TEST YOUR KNOWLEDGE

- 2) **Damage to which area may cause a visual field impairment?**
- a) The temporal lobe
 - b) The occipital lobe
 - c) The cranial nerves 2, 3, 4, 5, or 6
 - d) All of the above



TEST YOUR KNOWLEDGE

2) Damage to which area may cause a visual field impairment?

- a) The temporal lobe
- b) The occipital lobe
- c) The cranial nerves 2, 3, 4, 5, or 6
- d) All of the above



TEST YOUR KNOWLEDGE

3) What strategy can be used for a survivor with a visual field deficit ?

- a) Stand on the side of the field deficit to take a history
- b) Put an eye patch on the good side as soon as possible
- c) Encourage scanning to the affected side
- d) Both b and c



TEST YOUR KNOWLEDGE

3) What strategy can be used for a survivor with a visual field deficit ?

- a) Stand on the side of the field deficit to take a history
- b) Put an eye patch on the good side as soon as possible
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Unilateral Spatial Neglect

Spatial neglect may result from lesions of the dominant parietal, temporal, or frontal cortex.

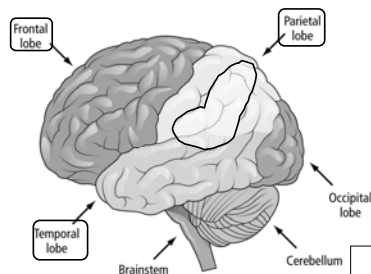


Image courtesy of Communications, Alberta Health Services

Unilateral Spatial Neglect

Spatial neglect is most often caused by a right middle cerebral artery stroke.

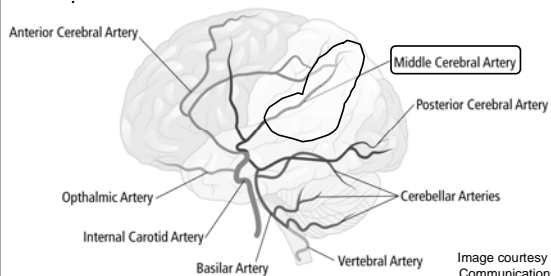


Image courtesy of Communications, Alberta Health Services

Unilateral Spatial Neglect

- ✦ A stroke survivor with neglect will not consistently attend or orient to sensory information in the visual field opposite the stroke (Teasell et al., 2008).
- ✦ A stroke survivor may have both neglect and a visual deficit.



Unilateral Spatial Neglect

- ✦ About 23% of stroke survivors have unilateral spatial neglect.
- ✦ About 8% of survivors have personal neglect.

(Pederson, Jorgensen, Nakayama, Raaschou, & Olsen, 1997; Appellos, Karlsson, Seiger, & Nydevik, 2002)

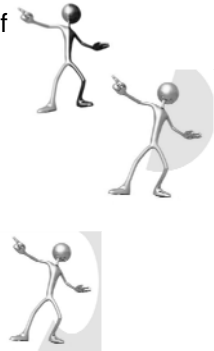
- ✦ For many survivors, neglect resolves by six months after the stroke (Appellos, Nydevik, Karlsson, Thorwalls, & Seiger, 2004).

Unilateral Spatial Neglect

There are different types of unilateral neglect:

- ✦ Personal neglect
- ✦ Peri-personal neglect
- ✦ Extra-personal neglect

(Eskes & Butler, 2001)

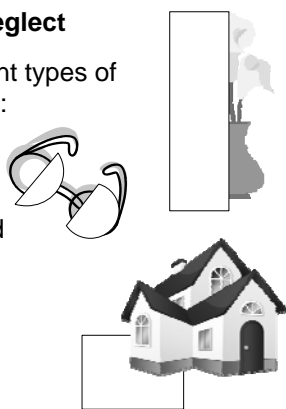


Unilateral Spatial Neglect

There are different types of unilateral neglect:

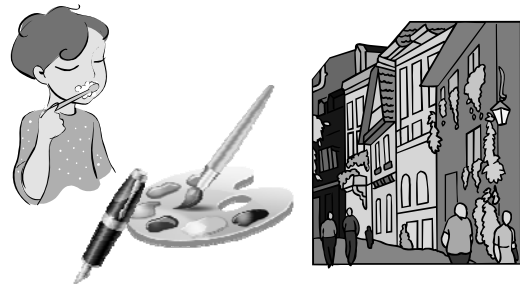
- ✦ Object-based
- ✦ Viewer-based
- ✦ Location-based

(Eskes & Butler, 2001)



Unilateral Spatial Neglect

What type of neglect might be observed when a survivor is doing these activities?



Unilateral Spatial Neglect

Line Bisection Test- A screen for neglect of peri-personal space.

- ✦ The survivor is given a sheet of paper with lines of various lengths and is instructed to mark the center of the lines.
- ✦ Survivors with unilateral spatial neglect may place the mark off the center or miss lines on one side of the page altogether.

2) Unilateral Spatial Neglect

Single Letter Cancellation Test- A screen for neglect of peri-personal space.

- ✦ The survivor is given a sheet of paper with a series of letters and asked to cross out a specific letter.
- ✦ Errors are recorded and differences between the two sides of the paper are noted.

Unilateral Spatial Neglect



Comb & Razor Test- A screen for personal neglect. It involves two tasks: combing hair and using a razor (for men), or a compact (for women).



Unilateral Spatial Neglect



Peri-personal and extra-personal neglect:

- ✦ Put important objects in the *intact* field (Eskes & Butler, 2001).
- ✦ Stand on the *unaffected* side to communicate.
- ✦ Cue the survivor to scan to the affected side (Vahlberg & Hellstrom, 2008, Salter et al., 2009).
- ✦ Visual cues in the affected space such as post-it notes or tape may be helpful.

Unilateral Spatial Neglect



Personal neglect:

- ✦ Encourage use of the affected limb where possible. If the survivor cannot use the limb to hold tools or dress, encourage them to use of the limb for stabilization.

TEST YOUR KNOWLEDGE



- 4) **What type of stroke will most likely result in unilateral spatial neglect?**
- a) A left anterior cerebral artery stroke
 - b) A right basilar artery stroke
 - c) A right middle cerebral artery stroke
 - d) Both b and c

TEST YOUR KNOWLEDGE



- 4) **What type of stroke will most likely result in unilateral spatial neglect?**
- a) A left anterior cerebral artery stroke
 - b) A right basilar artery stroke
 - c) **A right middle cerebral artery stroke**
 - d) Both b and c

TEST YOUR KNOWLEDGE



- 5) **What is a possible sign of unilateral spatial neglect?**
- a) Bumping into door jambs
 - b) Only eating the food on one half of the tray
 - c) Only combing hair on the right side
 - d) All of the above



TEST YOUR KNOWLEDGE

- 5) What is a possible sign of unilateral spatial neglect?
- a) Bumping into door jambs
 - b) Only eating the food on one half of the tray
 - c) Only combing hair on the right side
 - d) All of the above



TEST YOUR KNOWLEDGE

- 6) What strategy can be used for a stroke survivor with unilateral spatial neglect?
- a) Stand on the nonaffected side (usually the right) to communicate
 - b) Clap loudly on the affected side to increase attention to that side
 - c) Encourage scanning to the affected side
 - d) Both a and c



TEST YOUR KNOWLEDGE

- 6) What strategy can be used for a stroke survivor with unilateral spatial neglect?
- a) Stand on the nonaffected side (usually the right) to communicate
 - b) Clap loudly on the affected side to increase attention to that side
 - c) Encourage scanning to the affected side
 - d) Both a and c

Other Perceptual Disorders

Perceptual deficits may arise from strokes of the parietal, temporal, or frontal lobes.

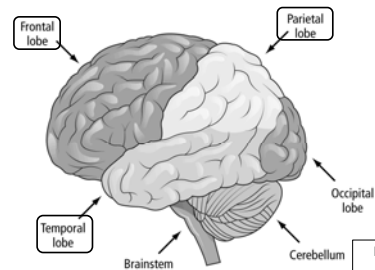


Image courtesy of Communications, Alberta Health Services

Other Perceptual Disorders

Deficits most often arise from a right middle cerebral artery stroke.

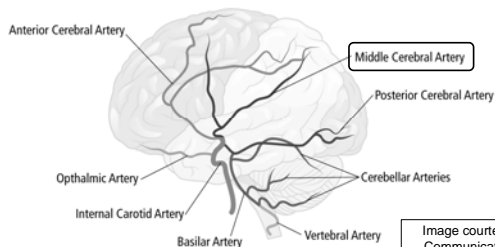


Image courtesy of Communications, Alberta Health Services

Other Perceptual Disorders

Perception is defined as “the ability to organize, process and interpret incoming visual information, tactile-kinesthetic information, or both, and to act appropriately on the basis of the information received” (Teasell et al., 2008, p. 7).

Other Perceptual Disorders

Rivermead Perceptual Assessment Battery-

- ✦ Assesses skills such as form constancy, spatial relations, figure ground discrimination, personal space, and hemi-attention.
- ✦ The battery is designed to require minimal speaking and understanding of language (Whiting, Lincoln, Bhavnani, & Cockburn, 1985).

Other Perceptual Disorders

There are many types of perceptual disorders:

Spatial Disorientation: Difficulty navigating in the environment.

Disorder of spatial relations: Difficulty relating the elements of objects to each other.

(Jutai et al., 2003)



Other Perceptual Disorders



Spatial disorientation: Provide a safe environment and encourage use of sequencing and identifying landmarks. Be wary of “left” or “right” cues.

Disorder of spatial relations: Allow extra time to search the environment before providing verbal cues.

(Jutai et al., 2003)

Other Perceptual Disorders

There are many types of perceptual disorders:

Impaired stereognosis: Difficulty identifying the identity of objects by sensation alone.

(Jutai et al., 2003)



Other Perceptual Disorders



Impaired stereognosis: The stroke survivor will usually compensate by using their vision.



Other Perceptual Disorders

There are many types of perceptual disorders:

Visual agnosia: Difficulty identifying an object by sight.

(Jutai et al., 2003)



Other Perceptual Disorders



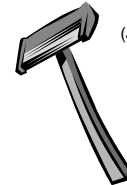
Visual agnosia: Allow extra time to identify objects in the environment. Permit the survivor to touch objects to identify them or describe its function.



Other Perceptual Disorders

There are different classifications of perceptual disorders:

Impaired form constancy: Difficulty identifying objects from different perspectives.

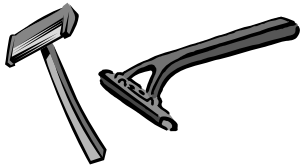


(Jutai et al., 2003)

Other Perceptual Disorders



Impaired form constancy: Allow extra time for the survivor to identify objects in the environment. Move the object to provide a different perspective if needed.



Other Perceptual Disorders

There are many types of perceptual disorders:

Impaired figure-ground discrimination: Difficulty differentiating objects from the background.



(Jutai et al., 2003)

Other Perceptual Disorders



Impaired figure-ground discrimination: Check if the survivor sees the object. You may need to provide verbal cues or place the object on a contrasting surface.



TEST YOUR KNOWLEDGE



- 7) What is visual agnosia?
- a) Forgetting the name of an object
 - b) Being blind to an object
 - c) Not knowing what an object is by seeing it only
 - d) All of the above

TEST YOUR KNOWLEDGE



- 7) **What is visual agnosia?**
- a) Forgetting the name of an object
 - b) Being blind to an object
 - c) **Not knowing what an object is by seeing it only**
 - d) All of the above

TEST YOUR KNOWLEDGE



- 8) **What strategy may help a stroke survivor with spatial disorientation?**
- a) Give the survivor a map
 - b) Help the survivor sequence the steps involved in getting where they want to go
 - c) Point out landmarks that confirm they are on the right route
 - d) Both b and c

TEST YOUR KNOWLEDGE



- 8) **What strategy may help a stroke survivor with spatial disorientation?**
- a) Give the survivor a map
 - b) Help the survivor sequence the steps involved in getting where they want to go
 - c) Point out landmarks that confirm they are on the right route
 - d) **Both b and c**

TEST YOUR KNOWLEDGE



- 9) **What strategy may help a stroke survivor with impaired form constancy?**
- a) Instruct the survivor to scan to the affected side
 - b) Turn the object to provide a different perspective
 - c) Put the object on a contrasting surface
 - d) All of the above

TEST YOUR KNOWLEDGE



- 9) **What strategy may help a stroke survivor with impaired form constancy?**
- a) Instruct the survivor to scan to the affected side
 - b) **Turn the object to provide a different perspective**
 - c) Put the object on a contrasting surface
 - d) All of the above

Case Study

- ✧ **Consider :**
 - ✧ **Location of the stroke.**
 - ✧ **Visual deficits** (if applicable).
 - ✧ **Perceptual disorders** (if applicable).
- ✧ **Examine how the interdisciplinary team works to address the relevant issues.**

Case Study (sample)

✧ Kate Jones

Mrs. Jones is 84 years old. She lives with her husband in the city and managed ADL and IADL independently prior to the stroke. She was an active volunteer for local service groups and particularly enjoyed gardening, baking, playing Bridge, and spending time with her grandchildren.

Case Study (sample)

✧ Location of the stroke and other lesions

Mrs. Jones sustained an ischemic lesion to the right parietal and frontal lobe, involving the *right middle cerebral artery*.

Mrs. Jones has left hemiplegia (more weakness of the arm than the leg), left hemianesthesia, subluxation of the left shoulder, dysarthria, and apraxia.

Case Study (sample)

✧ Visual deficits

Range of Motion: Range of motion of the eyes is symmetrical and within normal limits.

Visual field screen: Cursors screen demonstrates intact visual field. Extinction in the left is apparent with a co-presented stimulus on the right.

Case Study (sample)

✧ Visual deficits

Saccades: Within normal limits

Informal Testing

Clinical Observation:

Auditory information
Visual information
Personal awareness

Case Study (sample)

✧ Perceptual disorders

Line Bisection Test: Mrs. Jones failed to mark 1 line and was between 6 and 10 mm off the centre of 3 other lines.

Single Letter Cancellation Test: Mrs. Jones marked 51/51 letters on the right and 41/53 letters on the left.

Case Study (sample)

The assessment findings suggest:

- ✧ Personal neglect
- ✧ Mild unilateral spatial neglect for peri-personal and extra-personal space
- ✧ Extinction with competing stimuli

Case Study (sample)

The team's approach includes to:

- ✧ Involve Mrs. Jones as an integral member of the team.

- ✧ Provide cues to scan to the left during personal care (brushing teeth, washing face, combing hair) and meals (so the whole plate is seen).

- ✧ Reorient the bed so the door is on Mrs. Jones' unaffected side. This will ensure that she is aware of her environment and is able to interact.

Case Study (sample)

The team's approach includes to:

- ✧ Consistently use a tray with a bumper on the outside and monitor Mrs. Jones when she propels the wheelchair to ensure the left arm does not get caught in the wheel.

- ✧ Educate Mrs. Jones and her family as to the presence of visuo-perceptual deficits and how best to help Mrs. Jones.

Practical Considerations- Visual-Perceptual Disorders

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Recommended Reading

Eskes, G. A., & Butler, B. C. (2001). Rehabilitation of Unilateral Neglect. *Geriatrics and Aging*, 4(9), 42-45.

Jutai, J. W., Bhogal, S. K., Foley, N. C., Bayley, M., Teasell, R. W., & Speechley, M. R. (2003). Treatment of Visual Perceptual Disorders Post Stroke. *Topics in Stroke Rehabilitation* 10(2), 77-106.

Salter, K., Bitensky, J., Bhogal, S. K., Foley, N., Menon, A., & Jutai, J. (2007). Perceptual Disorders. In *Evidence-Based Review of Stroke Rehabilitation*. Canadian Stroke Network.