

4.1 Vision and Visual Perception

There are many considerations that are crucial to promoting safety and optimizing recovery when working with people who have had a stroke. The TACLS Quick Reference Guides were developed from the TACLS resource and can be used as quick reference to help *support healthcare providers* and informal caregivers who may not typically work with and care for people who have had a stroke.

We recommend reviewing the full **TACLS resource** for more complete information:
strokebestpractices.ca/resources/professional-resources/tacsls

Quick reference guide highlights

- **Always follow the current care plan for the person that you are working with.**
- All people with stroke should be screened for visual, visual motor and visual perceptual deficits as a routine part of the broader rehabilitation assessment process.
- Basic visual skills (visual acuity, oculomotor control, visual fields) form the foundation for visual perception and visual cognition. This allows us to develop an accurate perception of our world. This first and most basic level includes:
 - **Visual acuity:** ability to see small details both close-up and at a distance (e.g., reading a menu, road signs and seeing details on a face).
 - Stroke can result in **visual acuity loss** causing a person to experience blurred vision.
 - How well a person sees things can also be impacted by lighting as well as the amount of contrast between what the person is looking at, and the background. This **loss of contrast sensitivity** can make it difficult to see contrast between an object and its background and may result in an inability to distinguish objects in the foreground from objects in the background.
 - **Oculomotor control:** ability of both eyes to work together to maintain focus on an object, have depth perception and to track objects. Lack of oculomotor control after a stroke can result in:
 - **Impaired eye movements**, affecting the eye's ability to move smoothly from focus on one object to another target, and/or to maintain focus on a moving object.
 - Inability to move both eyes together which can cause blurred and/or **double vision** (diplopia).
 - **Constant and unintentional eye movement**, making focusing difficult (nystagmus).
 - **Impaired depth perception**, creating difficulty with locating objects and making it hard to judge distance.

- **Visual fields:** includes the ability to see everything in front while looking straight ahead.
 - **Visual field loss,** results in a person only being able to see part of what is in front of them.
 - The amount of visual field loss varies but people often experience loss of the left or right fields of vision from both eyes.
 - A person is often unaware of the missing area of vision as the brain “fills in” the missing information, but inaccurately. They may bump into doors or objects on the side of the visual field loss, are unable to locate objects, use the wall as a guide when walking and/or have difficulty reading as they only see one half of a sentence or a page.
- **Visual cognition:** refers to higher level visual and visual perceptual abilities, and relies on visual foundational skills described above. Impairments of visual cognition can affect for example, the ability to take in visual information, recognize shapes, understand concepts, orient oneself in relation to other objects, remember, and use visual information to solve problems.



How you can help – Visual field loss

- Encourage the person to look more towards the affected side.
- Place items on affected side and/or walk on the affected side to increase awareness of that visual space.
- Practice scanning activities to encourage looking from left to right in a repetitive way; this can help the person become more aware of their visual field loss and remind the person to look further to their affected side.



How you can help – General strategies

- Team members trained to address vision and visual perception impairments (e.g., occupational therapists and neuro-ophthalmologists) will provide support and strategies to adapt to the impairments and recommendations to reduce their impact.
- Encourage the person to use the recommended strategies from the care plan.
- You can help family members understand that vision and visual perceptual problems are a result of the stroke, and once the problem is identified, strategies can be developed and implemented to improve or manage function. This may reduce frustration for everyone and improve safety, independence, and self-esteem. Examples of strategies that may be recommended include:
 - **Manage the environment:** keep spaces organized and uncluttered; always place items in the same place; use reference points and/or increase colour contrasts to highlight edges of tables or stairs.

- **Support safe mobility:** supervise transfers and encourage aids if prescribed; reduce obstacles and clutter; ensure good lighting; encourage use of the handrail and going slow on stairs; take the same route to a location every time, noting landmarks along the way.
- **Use practical approaches:** do activities that require sustained vision for small amounts of time with frequent rest breaks; identify yourself when coming up to a person who has difficulty recognizing faces.

Note: This information represents some of the priorities of care related to vision and visual perception; consult the physician, neuro-ophthalmologist and occupational therapist for any questions or concerns regarding vision and visual perceptual changes or impairments.

References:

1. Canadian Stroke Best Practice Recommendations: www.strokebestpractices.ca, **Rehabilitation and Recovery following Stroke**, 6th Edition, Section 8
2. Taking Action for Optimal Community and Long-Term Stroke Care (TACLS) – **Vision and Visual Perception**
3. Warren M. A hierarchical model for evaluation and treatment of visual perceptual dysfunction in adult acquired brain injury, Part 1. *Am J Occup Ther.* 1993 Jan;47(1):42-54. doi: 10.5014/ajot.47.1.42. PMID: 8418676.

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