

MODULE 9: COGNITION, PERCEPTION, AND BEHAVIOUR



Learning Objectives



Upon completion of this module, nurses will be able to:

- Describe cognition, perception, and behaviour
- Identify cognitive problems after stroke
- Name strategies for helping stroke survivors with cognitive problems
- Identify perceptual problems after stroke
- Name strategies for helping the survivor with perceptual problems
- Understand the impact of stroke on behaviour
- Identify specific behaviours related to stroke
- Name strategies to deal with behaviour problems caused by stroke

SECTION 5

Cognition



Section overview

This section looks at:

- Explaining cognition
- Some of the possible cognitive problems after stroke
- Strategies for helping stroke survivors with cognitive problems.

Your role as health care provider

When you understand how a stroke affects the survivor's cognitive abilities, you can provide better care and support. You play an important role helping the stroke survivor stay safe. You can also help the survivor learn to be more independent.

Cognition

Cognition refers to how we know things and how we think.

Cognition involves:

- **Attention:** Being able to concentrate on one thing for a period of time.
- **Orientation:** Being aware of time, place, and who we are.
- **Memory:** Being able to retain and recall personal experiences, information, and skills.
- **Insight:** Knowing and understanding our abilities and limitations.
- **Judgment:** Making good choices and decisions while being aware of our own capabilities.
- **Sequencing:** Being able to arrange things or perform actions in the right order.
- **Problem solving:** Knowing how to recognize a problem and find a good solution.

Cognitive problems

Cognitive problems are **invisible barriers**. They are not as easily seen as physical problems. A survivor with cognitive problems may not appear to have any impairment. Yet, cognitive problems can have a major impact on a survivor's function and level of independence.

Family and friends can sometimes overestimate the survivor's abilities. They may become frustrated and angry with the survivor who has cognitive problems. They may believe that the survivor is acting this way on purpose, is unmotivated or being stubborn. However, we might be expecting too much.

Do not confuse cognitive problems related to stroke with dementia. Although some stroke survivors may also have dementia, you need to know the difference to provide the survivor with the right care.

After someone has a stroke, their cognitive abilities may be affected. A stroke survivor can improve some of these skills over time. However, some problems may persist and adaptive strategies need to be considered. In this section, we go through some of the cognitive problems and adaptive strategies that can help.



Identify problems and find strategies to help the survivor with cognitive problems. Doing so can help the survivor perform tasks. It also reduces frustration among family, friends, or care givers.

Attention

Attention means being able to focus on one thing. Survivors may have a short attention span. They may be easily distracted. This limits their ability to focus on a task. The survivor may need more time to finish a task because of distractions.

How you can help

- Get rid of any distractions – including television, radio, and other conversations
- Give short, simple, step-by-step instructions. Make sure the survivor understands the instructions before you continue. Help the survivor focus on one thing at a time
- Make direct eye contact – this helps the survivor focus on what you are saying and follow your instructions
- Give the survivor more time to think
- Slow down so the survivor doesn't feel pressured

Orientation

Orientation is the awareness of time, place and person. After a stroke, the survivor may lose some awareness in any or all of these areas. For instance, the survivor may think the year is 1975, or the season is fall instead of summer. The survivor may think that they are in school instead of a long-term care home. Or, they may not know their correct date of birth or age.

How you can help

- Give gentle reminders and the correct information. Do not make the survivor feel foolish
- Include the date when greeting the survivor. For example: *Good morning, Mrs. Smith Today is Wednesday, October 15th*
- Post a calendar to help the survivor keep track of the day and date
- Use a bulletin board to list personal information and post family pictures
- Limit changes to the survivor's schedule to keep them from getting confused

Memory

Memory means being able to retain and recall personal experiences, information, and skills. Attention is the basis for most types of memory. A survivor who cannot pay attention to new information cannot store it in memory. Memory problems can affect the stroke survivor's ability to learn new information and carry it over to everyday tasks. Stroke can affect different types of memory:

- **Short-term memory:** The name of a person you just met.
- **Recent memory:** What you ate for breakfast.
- **Long-term memory:** Memories from childhood.

How you can help

- Encourage the survivor to use memory aids. These may include a daily planner, calendar, and sticky notes
- Repeat information to help the survivor remember it
- Store items in the same place. Label drawers and cupboards with the contents
- Provide simple, clear information. Provide only the key information. This helps the survivor focus on what is important

- Present new information one step at a time. This allows the survivor to concentrate on one piece of information before moving to the next step
- Use signs or pictures as memory cues. You may want to place a sign on the survivor's door and family pictures on the bulletin board

Case example:

Mrs. Wright has experienced some memory problems as a result of her stroke. She often becomes upset when she cannot remember where familiar items are stored or what she did the day before.

Fiona (her support worker) helps Mrs. Wright by jotting down the day's activities in a journal. When Mrs. Wright is uncertain about an event, she can look it up. As a result of these "reminders", Mrs. Wright often can recall the event. In order to help Mrs. Wright find stored items, Fiona takes care to return each item to the same place. Labels on the outside of Mrs. Wright's cupboard help her to locate items more easily.

Insight

Insight means recognizing and understanding your abilities and limitations. A lack of insight may lead a survivor to perform unsafe actions. For example, a survivor may not recognize that a weak leg makes it unsafe to walk alone.

How you can help

- Make the environment as safe as possible
- Have walking aids and other assistive devices close at hand for survivors with impaired mobility
- Gently remind the survivor about the stroke and the resulting limitations
- Provide the necessary amount of supervision to ensure the survivor's safety

Case example:

Mr. D'Angelo had a stroke three years ago. He thinks he can transfer to and from the toilet independently but in reality requires assistance due to his poor balance. As a result, Mr. D'Angelo is at high risk for falling.

When he was first assigned to assist Mr. D'Angelo, John (his support worker) discussed this issue with Mr. D'Angelo's wife and his occupational therapist. Together, they developed strategies to reinforce with Mr. D'Angelo the need to call for assistance during toilet transfers.

Judgment

Judgment means making the right choices and decisions while being aware of one's own capabilities. With impaired judgment, the survivor may make choices that are not safe, for example, not wearing the right clothing in extreme weather.

How you can help

- Discuss your concerns about the survivor's safety with the team
- With your team members, develop strategies to optimize safety and functioning
- Do not place the survivor in difficult or challenging situations. The survivor may be unable to decide what actions are safe
- Maximize the safety of the environment. If the survivor uses a wheelchair, make sure the wheelchair seatbelt is fastened. If the person uses a walker, keep it within reach

Impulsivity

Impulsivity is acting quickly without thinking things through. Problems with insight and judgment after stroke often lead to impulsivity. The survivor may act on sudden urges that could result in injury. For example, a wheelchair-dependent survivor may attempt to get up quickly without locking the wheelchair brakes.

How you can help

- Encourage the survivor to slow down
- Give clear and specific instructions
- Divide tasks into small steps. This lets the survivor focus on one part of the task at a time. Make sure that the survivor performs one task before moving on to the next. For example, *"Swallow that mouthful of food first. Then you can take another bite."*
- Make the environment as safe as possible. Make sure that walking aids and assistive devices are close by

Sequencing

Sequencing means being able to arrange things or perform actions in the right order. A survivor with sequencing difficulties may be unable to start a task because the survivor doesn't know where to begin. The survivor may do things in the wrong order. For example, the survivor may forget that underwear goes on before pants, and socks go on before shoes.

How you can help

- Give clear step-by-step instructions to help the survivor understand the task
- Help the survivor plan the task. Encourage the survivor to think through the task. Explain the next step to the survivor if needed
- Give the survivor time to practice the task, even though it takes a while or is difficult
- Repeat the task the same way each time

Sample Sequencing

To put on a sweater, the survivor is instructed to:

- a) Put the affected arm into its sleeve first
- b) Put the unaffected arm into its sleeve
- c) Pull sweater over head
- d) Pull sweater down in back

This sequence is repeated in the same order each day.

Problem-solving

Problem solving is being able to recognize a problem and find a good solution. Problems with insight, sequencing, and memory can affect the survivor's problem-solving ability. For example, the survivor may be unable to get toothpaste out of the tube, not realizing that the cap has to come off the tube.

How you can help

- Break tasks into small steps. Focus on one step at a time. This helps the survivor focus on one part of the problem before moving to the next.
 - Give verbal cues. This helps the survivor develop the solution to a problem.
 - Help the survivor identify different ways of solving the problem. Talk about the different ways the problem could be approached.
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Upon reflection

Think of an everyday task, like brushing your teeth. What challenges might you have if you had problems with memory? What about sequencing? What about attention?

What 3 strategies would you use to support a stroke survivor who has problems with orientation?

SECTION 6

Perception



Section overview

This section looks at:

- Explaining perception
- Perceptual problems after stroke
- Strategies for helping the survivor with perceptual problems

Your role as health care provider

You can help the stroke survivor with perceptual problems to stay safe. You can encourage the survivor to use aids and strategies to deal with perceptual problems. Your patience and support can help the survivor be more independent and aware of their environment.

Perception

Perception refers to the way we understand our environment. Perception is how we process and interpret information from our senses: vision, hearing, touch, taste, and smell.



Practice and repeating activities can improve perceptual abilities.

Stroke may cause different perceptual problems, including:

- **Time awareness:** How we see time passing
- **Spatial relations:** How objects relate to each other and how we relate to objects in the environment
- **Visual neglect:** Less awareness of the body and environment on the side of the body affected by the stroke
- **Unilateral body neglect:** Less awareness or failure to attend to the affected side of the body
- **Apraxia:** Difficulty making purposeful movements even though the survivor has the physical ability and the understanding to perform the task
- **Perseveration:** Repeating a word, phrase, or action and not being able to stop
- **Vision problems:** Double vision, partial loss of vision in one or both eyes, and visual field loss

Like cognition problems, perceptual problems are **invisible barriers**. They are not as easily seen as physical problems. A survivor with perceptual problems may not appear to have any impairment. Perceptual problems change how the survivor interprets what they see and how they make sense of the world.

Family and friends may sometimes expect too much of the survivor. They may become frustrated and angry, believing the survivor is acting this way on purpose or is not motivated enough.



We need to see perceptual problems as effects of the stroke. You can help by identifying the problems and using strategies to help the survivor function. This may also reduce frustration among family, friends, and caregivers.

Time awareness

Time awareness is the recognition of time passing. After stroke, the survivor's understanding of how time passes may change. For example, the survivor may want dinner soon after finishing lunch, not realizing that only 20 minutes have passed.



How you can help

- Link events to other events, not to specific times. For example, *Bingo will start after lunch*, rather than *Bingo is in an hour*
- Review the daily schedule with the survivor
- Maintain a consistent schedule to limit confusion
- Reassure the survivor who is anxious about an appointment or meeting. Tell them you know about the appointment and will let them know at the right time.
- Listen to the survivor, but let the person know the reality: *I know it seems like I left you for hours, but I have only been gone for 15 minutes*
- Use a digital clock or talking clock

Case example:

Mr. Barton asks his support worker to find out if it is time to go for lunch. The support worker explains to him that it is only 10:00 a.m. and that lunch isn't until 12:00 noon. He then positions Mr. Barton's digital clock so that he can see it.

Spatial relations

Spatial relations refer to how objects relate to each other and how we relate to objects in the environment. Problems with spatial relations can include:

- Misjudging the height of steps
- Pushing towards the affected side during transfers
- Knocking items over
- Missing the chair when sitting down
- Tripping over rugs, steps, and uneven pavement

How you can help

- Talk with your team about the best strategy or assistive devices to use. Some examples are: a non-spill cup, fluorescent tape at the edge of steps and on the lip of the bathtub.
- Encourage the survivor to practise and repeat actions. This may help the survivor become familiar with the activity and retrain the brain.
- Make the environment as safe as possible. For example, get rid of clutter to prevent the risk of falling.

Visual neglect

Visual neglect causes decreased awareness of the body and environment on the side affected by the stroke. The survivor may pay attention to only part of an object or part of a view. They may bump into things on the affected side. They may not see food in front of them on the affected side.

How you can help

- Arrange the environment to provide stimulation on the stroke-affected side. This helps the survivor become more aware of the whole environment.
- Approach the survivor from the unaffected side to avoid startling them. Then, move to the affected side to speak. This provides stimulation on the affected side.
- Use visual cues to assist the survivor. For example, place a line of red tape at the edge of a table on the affected side.
- Encourage the survivor to scan the environment. One strategy is called the **Lighthouse Strategy***: Ask the survivor to imagine their eyes as beams of light sweeping from side to side. Remind the survivor to use the Lighthouse Strategy during activities.



Case example:

Mr. Wong has left neglect. When a support worker approaches him, she goes to his right side first. Once he is aware that the support worker is there, she crosses over to his left side to provide stimulation on that side. In this way, she encourages Mr. Wong to attend to that side of the environment.

Unilateral body neglect

Unilateral body neglect is a decreased awareness or failure to attend to the affected side of the body. The survivor of a right brain stroke may ignore the left half of their body. The survivor may forget to dress the affected side or may leave the affected arm hanging over the side of the wheelchair.

How you can help

- Talk with the team about using the affected arm or leg in daily activities
- Position the affected arm so the survivor can see it
- Gently rub the affected arm to stimulate sensation and awareness
- Encourage the survivor to help position the affected limb
- Use cues to draw attention to the affected side. For instance, ask the survivor “Where is your arm?”

Case example:

Mrs. Brown initially had a problem with leaving her affected left arm hanging over the side of her wheelchair. She was provided with a lap tray. Support workers reinforced the importance of positioning her left arm on the lap tray so that it would not get injured. Over time, Mrs. Brown became better able to place her affected arm on the tray without cueing.

* Niemeier, J.P., Cifu, D.X., Kishore, R.; “The Lighthouse Strategy: Improving the Functional Status of Patients with Unilateral Neglect After Stroke and Brain Injury Using a Visual Imagery Intervention”; Topics in Stroke Rehabilitation. 2001 Summer; 8(2):10-8.

Apraxia

Apraxia is difficulty in making purposeful movements, even though the survivor has the physical ability and understanding to perform the task. This happens because messages from the brain to the muscles are not being processed properly.

Apraxia can affect how the movement is planned for both sides of the body, not just the affected side. For example, the survivor may still have trouble performing simple, everyday tasks like hair brushing or getting dressed. Apraxia can also affect the survivor's ability to speak.

How you can help

- Talk with the team about the best strategy or assistive devices to use. These may include physical cues, verbal cues, and demonstration
- Use short and simple instructions to limit confusion
- Break the task into simple steps. Use these steps every time the task is performed
- Encourage repetition and practice of activities
- Provide hand-over-hand guidance if necessary. Guide the survivor but do not perform the task

Case example:

Initially, Mr. Black would try to use his toothbrush to comb his hair. Each day, support workers guided Mr. Black's hand as he used his toothbrush to brush his teeth. A few weeks later, Mr. Black was able to pick up his toothbrush and use it correctly without assistance.

Perseveration

Perseveration is the uncontrollable repetition of a word, phrase, or action. When this happens, the person cannot move on to the next activity or thought. The survivor may seem to get "stuck". For example, they may keep washing their face over and over, or keep repeating the same word.

How you can help

- Plan the task with the survivor. This will help the survivor understand the steps involved.
- Provide clear, step-by-step instructions. Give the survivor time to practise the sequences.
- Help the survivor stop if they get "stuck" and assist them to start the next step.
- Provide hand-over-hand and visual cues. For example, showing the survivor a cup during teeth brushing to cue the person to stop brushing and begin rinsing.



"HAND OVER HAND" GUIDANCE

Vision problems

Problems with vision are fairly common after a stroke. Problems include:

- double vision
- partial loss of vision in one or both eyes
- blurred vision
- visual field loss



Double vision



Blurred vision



Visual field loss

Sometimes, vision problems improve in the weeks after a stroke. However, many survivors must learn to adapt to their vision problems using techniques taught to them by their therapists.

How you can help

Talk with the team about the best strategies for dealing with a specific vision problem – for example, from which side to approach the survivor.

Encourage the survivor to use the techniques the team recommends to deal with vision problems during activities. These techniques might include:

- The **Lighthouse Strategy** (imagining the eyes as beams of light sweeping from side to side)
- Visual cues such as a sign on the door saying “bathroom” to help the survivor find the way
- Reference points or anchors – for example, red tape on the edge of a table

For visual field loss:

- Encourage the survivor to turn their head to the affected side
- Place items on the affected side to increase the survivor’s awareness of that visual space
- Encourage the use of an eye patch or prism glasses, if prescribed

Upon reflection

What are three strategies you can use for someone who has unilateral body neglect?

Think of someone you have cared for who had problems with spatial relations. How did you help that person stay safe?

SECTION 8

Stroke and behaviour change



Section overview

This section looks at:

- The impact of stroke on behaviour
- Specific behaviours related to stroke
- Strategies to deal with behaviour problems caused by stroke

Your role as health care provider

The loss of brain cells due to a stroke can change how a person acts. Your knowledge and understanding of behaviour changes after stroke is important. You can help the survivor and family understand that stroke can cause changes in the brain that make a person behave differently.

The impact of stroke on behaviour

Some stroke survivors may have little or no change in behaviour. Others, however, may go through major behaviour changes. Behaviour changes depend on:

- Where the stroke was in the brain
- How severe the stroke was
- How long ago the stroke occurred
- The survivor's personality, cognitive abilities, and behaviour before the stroke

Some behaviours result from **cognitive** or **perceptual** problems. Other behaviour changes have to do with changes in the survivor's ability to communicate.

You may not see consistent behaviour changes. A survivor may have good days and bad days, or good and bad times during the course of a day.



It is important to remember that the behaviour changes are due to the stroke. The survivor is struggling to cope with the effects of the stroke – that takes time. Treat the survivor as you would like to be treated. Show respect and kindness. Exercise patience.

Personality changes

Damage to the brain can decrease a survivor's emotional control. It can also change the way the survivor behaves and relates to others. Here are some of the effects:

- The behaviour may not match the survivor's feelings at the time. For example, the survivor may laugh at a sad story.
- Survivors may not realize how their behaviour affects others. For example, the survivor may not realize that they have said things that hurt or upset a family member.
- Survivors may have extreme mood swings, such as being upset one minute and laughing the next.
- They may lose interest in things around them. For example, a survivor who used to read regularly may no longer pick up a book.
- They may appear stubborn, selfish, or demanding.

What you can do to help

Whatever the behaviour, it is best to use patience, common sense, and a problem-solving approach. Here are some strategies to deal with specific behaviours, based on their causes.

Emotional lability

Emotional lability is a lack of emotional control. You may observe:

- Emotional responses that appear excessive. For example, the survivor may sob uncontrollably at a touching story.
- Emotional responses that do not match the emotions being experienced. For example, the survivor may laugh on hearing bad news.

Emotional lability can be upsetting to the people around the stroke survivor. Communication difficulties may result when people misinterpret a survivor's emotional responses.

What you can do to help

- Ask the survivor if the feelings they are showing on the outside match how they are feeling on the inside.
- The survivor may be embarrassed after losing control of emotions. Try distracting the survivor to help them regain control and get on with an activity. For example, call the survivor's name. Or, ask an unrelated question in a matter-of-fact way. Encourage the survivor to slow down and take some deep breaths.
- Explain to the survivor and family members that loss of emotional control is common after stroke.

Case example:

Since his stroke, Mr. Tomas has had difficulty with emotional control. He cannot watch the evening news without crying uncontrollably. This reaction upsets him. His support worker finds it effective to distract Mr. Tomas. She asks him if he would like a snack or if his favourite show is on next. This sometimes helps Mr. Tomas stop crying.

Social isolation

Survivors may have trouble coping with their **self image** (how they look). A poor self image can cause low **self esteem** (how they feel about themselves). They can lose confidence. Survivors may feel sadness or despair, or that life no longer has meaning. They may also feel helpless, with little control over their lives.

These feelings can cause stroke survivors to stop doing things that used to be important to them. They can be discouraged by the physical and emotional challenges. They may isolate themselves and avoid social activities, family, and friends.

A survivor may regain the ability to perform many activities of daily living. However, he or she may seem to have lost interest in living. As one survivor put it, "There's more to life than relearning how to pull on your pants."

What you can do to help

Helping the survivor to participate in life again is one of the most important things you can do.

Interests:

- Try to learn what matters to the survivor and what their interests are. What activities are most important? What brings enjoyment?
- Help the survivor to return to favourite activities. Get help from the team if you need it.

Personal care:

- Encourage survivors to participate in their own care as much as possible
- Include the survivor in discussions and decisions about care
- Rearrange personal items in a way that gives the survivor more independence

Social activities:

- Encourage the survivor to attend activities. Just showing up is the first step in starting to take part again
- Give the survivor the chance to talk about life experiences and memories
- Support the survivor in contacting and participating in their faith community

Case example:

Judith Rosen had a stroke 18 months ago. She has some weakness on the right side. The right side of her face droops. She feels very self-conscious and is reluctant to go out. Her support worker encourages Mrs. Rosen to go out, first to quiet, familiar places. Little by little, Mrs. Rosen is becoming less self-conscious and more interested in going out.

Anger and aggression

Everyone, including stroke survivors, has angry outbursts from time to time. But some survivors may even be physically aggressive towards family or support staff. This is uncommon, however.

Survivors may refuse to comply with directions. They may have a hard time getting over their anger. This makes it difficult to reason with them. It is important to identify the causes of angry outbursts. Events like these may cause angry outbursts:

- Inability to communicate or to perform a task, leaving the survivor feeling frustrated
- A toileting accident that embarrasses the survivor
- Pain in the affected side that makes the survivor feel helpless and frustrated

What you can do to help

Look for causes:

- Identify the cause of the anger and try to find solutions
- Identify pain so that it can be treated

Prevent outbursts:

- Learn the survivor's preferences in daily routines. Follow them whenever possible
- Do not alarm the survivor by approaching from the affected side. Instead, approach the survivor from the unaffected side
- Explain what you are planning to do, so the survivor is prepared
- Help the survivor feel successful by alternating between easy and more difficult tasks
- Offer support or assistance as needed during activities that cause frustration

During an outburst:

- Remove the survivor from the situation or activity that triggered the outburst
- Redirect the survivor's attention to something positive, such as a favourite activity

Lethargy (lack of interest)

Survivors with damage to the right side of the brain may seem to lack interest in daily activities or leisure activities. If a survivor tries to do something and fails, they may refuse to try again, or be unwilling to try at all.

What you can do to help

Learn what interests them:

- Make it as easy as possible to participate. Attendance is the first step in participation
- Reinforce and support any interest the survivor shows. Use praise and encouragement
- Encourage the survivor to try again if an initial attempt to do something fails
- Do not embarrass or force a survivor who refuses. Instead, try later

Case example:

Harry Johnston had a stroke almost a year ago. He experienced very little loss of mobility. However, he seemed to lose all interest in previous pastimes. His support worker has helped him regain interest in activities by encouraging him to attend social events. To reduce the risk of frustration, she encourages him to take part in activities he can easily do. For example, Harry was an avid bridge player before his stroke. She is encouraging him to play Hearts, an easier card game.

Social judgment

Social judgment is saying and doing the right thing in a situation. Personality changes due to stroke may cause poor social judgment, which leads to other problems. Problems with cognition can contribute.

Family and friends may draw the wrong conclusions when they see behaviour that is out of character for their loved one. Some examples:

- A shy person may suddenly want to be the centre of attention
- A talkative individual may become quiet
- An easygoing person may now show a rigid personality
- A previously neat and fastidious person may become sloppy about personal grooming and appearance

What you can do to help

Recognize the survivor's limits:

- Avoid situations that require the survivor to make decisions beyond their capabilities

Give feedback and cues:

- Your feedback can help the survivor recognize inappropriate behaviour
- Inform the survivor of inappropriate behaviours in a straightforward way
- Offer appropriate alternatives
- Do not criticize

Reinforce appropriate actions:

- Always react in a positive way to reinforce appropriate behaviour
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Upon reflection

What types of behaviour changes can survivors experience after stroke?

As a care provider, what strategies can you use to deal with negative behaviour changes in a survivor?"

References

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