

## How well do you know your brain?

Getting to know brain anatomy can go a long way  
In helping your brain injury clients

*To suggest topics, call Angela Veri, National Director of Customer Relations.*

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The brain is made up of many parts with each part responsible for specific cognitive functions. So that we can do all the things we need and want to do, the brain must inter-relate all of its many parts. As a result, after brain injury, knowing the location of the lesion, as well as observing your client's day-to-day activities provides invaluable insight into the nature of the injuries. Here is an overview of the parts of the brain:

**Frontal Lobe:** area right behind the forehead. It is responsible for all planned voluntary behaviour. For example, this lobe:

- determines our consciousness so that we know what we are doing;
- determines personality;
- initiates activity in response to our environment;
- establishes our memory of habits and motor activities;
- controls our emotional response, creates judgments and controls inhibition; and
- controls language, creates word associations and assigns meaning to words.

**Parietal Lobe:** near the back and top of the head. It is responsible for perceiving, analyzing and assembling touch information from the body. Overall, this lobe integrates our various senses to understand concepts and make sense of the world.

**Optical Lobe:** at the back of the head. As its name implies, it is responsible for vision.

**Temporal Lobe:** at the side of the head above the ears. It is responsible for hearing and memory, as well as some visual perceptions and categorizing objects. Responsible for expressed behavior and receptive speech.

**Brain Stem:** connects the brain to the spinal cord. It is responsible for:

- breathing, heart rate, swallowing;
- reflexes when seeing and hearing;
- sweating, blood pressure, digestion, temperature;
- alertness level and ability to sleep; and
- sense of balance.

**Cerebellum:** at the base of the skull. It is responsible for:

- coordination and voluntary movement;
- balance and equilibrium; and
- some memory of reflex motor skills.

Please see the attachment for an overview of type of problems you may observe after brain injury depending on what area of the brain is injured.

**COMMON OBSERVED PROBLEMS AFTER INJURY TO DIFFERENT PARTS OF THE BRAIN**

<p><b>Frontal Lobe</b></p>	<ul style="list-style-type: none"> <li>• Inability to focus on tasks and/or plan and sequence the movements to conduct tasks that involve multiple steps</li> <li>• Changes in social behaviour like loss of spontaneity while interacting with others and inappropriate sexual behavior</li> <li>• Persistent focus on a single thought</li> <li>• Personality and mood changes</li> <li>• Difficulty with problem solving including loss of flexible thinking</li> <li>• Inability to express language</li> </ul>
<p><b>Parietal Lobe</b></p>	<ul style="list-style-type: none"> <li>• Inability to attend to more than one object at a time and/or name an object</li> <li>• Difficulty locating the right words for writing</li> <li>• Problems trying to read or do mathematics</li> <li>• Difficulty drawing objects and/or distinguishing left from right</li> <li>• Lack of awareness of certain body parts and/or surrounding space resulting in problems with self-care</li> <li>• Inability to focus visual attention and problems with eye/hand coordination</li> </ul>
<p><b>Optical Lobe</b></p>	<ul style="list-style-type: none"> <li>• Vision defects (e.g., cuts in the visual field)</li> <li>• Difficulty locating objects and/or seeing objects accurately</li> <li>• Problems with recognizing words, drawing objects or recognizing how objects move</li> <li>• Difficulty identifying colours, reading and writing</li> </ul>
<p><b>Temporal Lobe</b></p>	<ul style="list-style-type: none"> <li>• Problems with hearing</li> <li>• Difficulty establishing memory</li> <li>• Difficulty with some visual perceptions</li> <li>• Difficulty with speech including expression and understanding language, and reading and writing</li> <li>• Problems with categorizing objects</li> <li>• Agitation, irritability, childish behavior</li> </ul>
<p><b>Brain Stem</b></p>	<ul style="list-style-type: none"> <li>• Difficulty breathing</li> <li>• Abnormal changes in heart rate and blood pressure</li> <li>• Difficulty swallowing food and water</li> <li>• Problems with organizing/perception of environment</li> <li>• Dizziness and nausea</li> <li>• Problems with sleeping and decreased alertness</li> </ul>
<p><b>Cerebellum</b></p>	<ul style="list-style-type: none"> <li>• Inability to walk, make fine and/or rapid movements or reach out and seize objects</li> <li>• Poor balance, dizziness, and tremors</li> <li>• Slurred speech</li> </ul>