



# Ask the Expert Information Sheet

## Cognitive Effects of Brain Tumours and Treatment

By: *Dr. Matias Mariani, Clinical Neuropsychologist*

For additional Information Sheets or to learn more about other brain tumour topics, visit [www.BrainTumour.ca](http://www.BrainTumour.ca)

Brain Tumour Foundation of Canada Information Sheets are provided as an informational and educational tool and are not intended to replace the advice or instruction of a professional healthcare practitioner, or to substitute for medical care. We urge you to seek specific medical advice on individual matters of concern.

Brain Tumour Foundation of Canada is generously supported by individuals, corporations and employee groups. It is through the tireless dedication of donors that help is available for anyone affected by a brain tumour, including patients, survivors and their loved ones.

All sensations, perceptions, emotions, experiences, movements and memories involve the brain. Individuals diagnosed with brain tumours often report difficulty focusing, processing what they read, finding words when speaking, recalling event details, completing tasks in a timely fashion, remembering why they entered a room, and/or coordinating movements. Family members may notice changes in their loved one's behaviour and/or motivation.

Neuropsychological effects depend on tumour size, momentum (the higher the grade, the faster the growth, the more evident the changes), and location. For example, most high-grade brain tumours involve the frontal and/or temporal lobe, which are highly developed areas responsible for memory formation, language, complex attention, visual processing and execution of movements, reasoning, planning and personality. In addition to specific changes, most individuals also experience diffuse, non-specific changes in mental stamina, alertness, speed of thinking, and overall ability to hold and work with information in mind. These changes may be due to a combination of inflammation, co-existing conditions (e.g., seizures), disconnection of functional networks, and/or the effects of the tumour pressing on healthy tissue.

Whereas treatment is crucial for survival, it may also result in adverse effects. Neighbouring healthy tissue may inadvertently be damaged during surgery. Chemotherapy agents may result in healthy cells being affected, especially in individuals with vascular risk factors. The early effects of radiotherapy may include headaches, nausea, and drowsiness as a result of increased swelling but these symptoms tend to improve with steroids. Later effects of radiotherapy, thought to be due to white matter damage, may involve slowed information processing, word and memory retrieval deficits, and diminished executive function. Age, genetic predisposition and other individual factors also play roles.

... continued on Page 2

## Additional support, information and education offered by Brain Tumour Foundation of Canada:

Adult, Pediatric and Non-Malignant Brain Tumour Handbook available in English and French.

“A Friend in Hope” children’s storybook available in English and French.

20+ Adult Support Groups across Canada (in-person and virtual)

Toll-free information and support line

BrainWAVE Pediatric Support Program

Print BrainStorm Newsletter  
Email Newsletters:

- E-BrainStorm
- Peace of Mind

“Grey Matters” Blog

All patient resources are available free-of-charge in Canada. Call 1-800-265-5106 or visit [www.BrainTumour.ca](http://www.BrainTumour.ca) for additional details and information.

Due to the complex and variable nature of brain tumours, rehabilitation must be customized to address the individual’s specific pattern of challenges. Below are 10 general strategies to help address some difficulties:

1. Implement a daily routine to reduce active processing of mundane tasks (e.g., always leave your keys in the same place)
2. Pace yourself and rest as often as needed throughout the day
3. Complete tasks during “peak” times of alertness and attention
4. Reduce the number and complexity of tasks to complete; intersperse easy and fun activities
5. Make short and long-term goals; break tasks into manageable “chunks” to be completed in a logical, step-by-step sequence
6. Reduce distractions (internal and external) and avoid interruptions when completing tasks
7. Use sub-vocal reminders and reorientation when completing tasks
8. Use alarm clocks, to-do lists, or a daily planner to keep track of medications, tasks, and appointments
9. Leave notes for yourself in prominent places (e.g., a list of morning routine on nightstand)
10. Make sure to have conversations with others in the same room, while making eye contact

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*At the Northeast Cancer Centre, Dr. Mariani assesses and treats individuals with brain tumours who are experiencing neurocognitive and/or psychological difficulties associated with their cancer diagnosis and/or treatment. Dr. Mariani has previously received Brain Tumour Foundation of Canada’s Award for Excellence in Psychosocial Oncology for his work with individuals with brain tumours.*



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