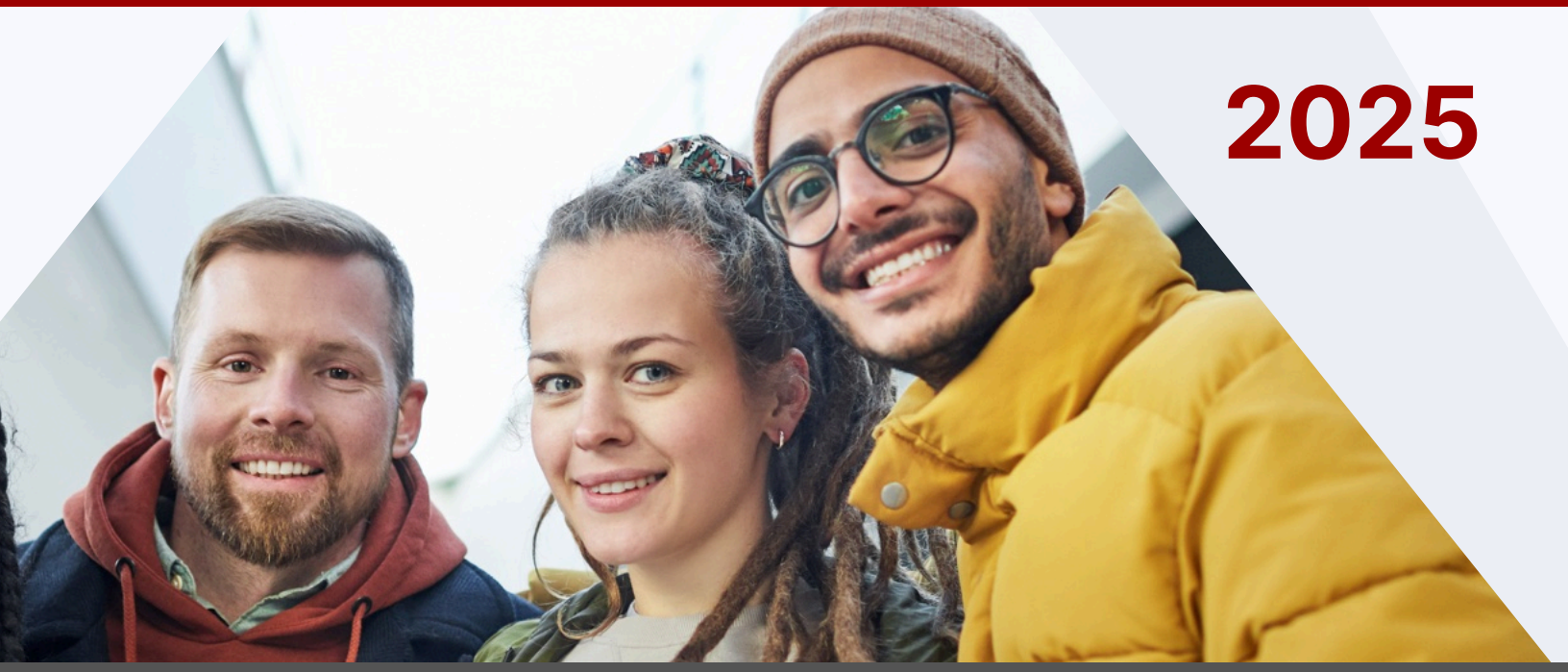
BRAIN INJURY CANADA
LÉSION CÉRÉBRALE CANADA

BRAIN INJURY IN CANADA:

CALL FOR A NATIONAL STRATEGY ON BRAIN INJURIES



2025

www.braininjurycanada.ca

EXECUTIVE SUMMARY

Brain injury is a significant public health issue in Canada, affecting millions of individuals and families. Despite its prevalence, brain injury remains underfunded, underserved, and frequently misunderstood. This report outlines the urgent need for a national strategy on brain injury, detailing the social, economic, and health impacts, and highlighting the voices of those affected. By establishing a comprehensive strategy, we can enhance prevention, promote research, and improve care, ultimately leading to better outcomes for Canadians living with brain injuries.

A national strategy on brain injury would:

- Standardize data on both the incidence rate and prevalence of brain injury across the lifespan to better understand the challenges and needs of the community, informing policy and health care resource allocation effectively.
- Provide more education and awareness specific to brain injury to equip health care providers, including newcomers to Canada, with knowledge about the cognitive, physical, behavioral, and emotional challenges of living with a brain injury so they can offer more informed and customized care.
- Allocate research funding specifically to brain injury rather than to "the brain" in general, emphasizing the need for differentiation.
- Focus research across the lifespan of brain injury from acute to chronic stages, supporting multi-centre studies and investigating community-based interventions that are cost-effective.
- Address intersections such as mental health, homelessness/unstable housing, legal system interaction, and problematic substance use, with an emphasis on brain injury as a contributing factor.
- Provide comprehensive education on prevention and implement preventative measures in appropriate fields/settings.
- Ensure that all initiatives are driven by lived experiences and that individuals and families feel supported by the Canadian health care system.
- Improve public understanding and awareness of brain injury among Canadians, supporting the dismantling of harmful stigmas and wider acknowledgment and incorporation of accessible accommodations.

THE REALITY OF BRAIN INJURY

Brain Injury refers to any damage to the brain that occurs after birth and is not related to a congenital or a degenerative disease.[1]

Brain injury can be classified as traumatic or non-traumatic:

Traumatic Brain Injury

Traumatic brain injuries (TBIs) are caused by something that comes from outside the body, such as a blow, bump, or jolt. It can result in temporary injury, or more serious, long-term damage to the brain.

Causes of traumatic brain injury can include:

- Motor vehicle accidents
- Falls
- Assaults
- Gunshot wounds
- Domestic violence
- Strangulation, suffocation
- Shaken baby syndrome
- Sport injuries
- Explosive blasts, combat injuries

Non-Traumatic Brain Injury

Non-traumatic brain injuries are caused by something that happens inside the body or a substance introduced into the body, resulting in damage to the brain.

They can include:

- Ischemic stroke
- Hemorrhagic stroke
- Aneurysm
- Seizure disorders
- Brain tumour
- Poisoning
- Opioid overdose
- Meningitis
- Encephalitis
- Hydrocephalus
- Vasculitis
- Hematoma

EFFECTS OF BRAIN INJURY

The effects of a brain injury can begin to show immediately and/or increase/decrease over time. Every individual will experience a unique combination of challenges and changes.

The following are examples of effects an individual with a brain injury could experience.

Physical effects

- Fatigue, difficulties with sleeping, insomnia
- Challenges with walking, sitting, moving from one location to another, bathing and household tasks
- Slurred speech
- Chronic pain, headaches
- Seizures
- Vertigo (sensation of dizziness / spinning / loss of balance)

Cognitive effects

- Needing more time to process information
- Difficulty with making plans, decisions, organizing or beginning tasks
- Challenges with communicating: understanding and making conversations, finding the right word, speaking in proper sentences, understanding cues
- Difficulty writing
- Difficulty with concentration, easily distracted
- Difficulty with memory, learning, reasoning and judgment
- Loss / changes to senses and perceptions: sensations, sense of smell or taste, vision, double vision, hearing, swallowing

"My severe brain injury just didn't happen to me. It happened to my whole family. My husband suddenly didn't have his wife, and our children didn't have their mother. The injury never goes away, and you are never the same person you once were."

Barb Butler, a former teacher from Regina seriously injured in a motor vehicle accident in 1993.

Emotional effects

- Feeling irritable, having a ‘short fuse’
- Depression, anxiety, anger
- Prone to sudden, extreme emotions for no clear reason
- Showing a limited emotional response to situations
- Feelings of loss of identity

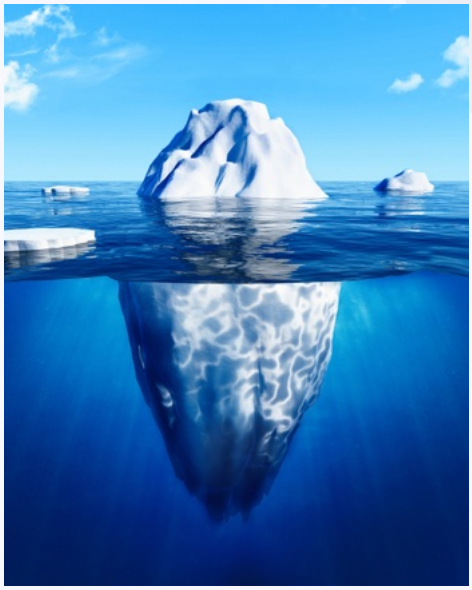
Behavioural effects

- Reacting on impulse, with little to no regard for consequences/outcomes
- Engaging in risky behavior
- Lack of a ‘filter’, saying things that are inappropriate
- Isolating oneself
- Difficulty with social and work relationships
- Changing / inconsistent sleep patterns
- Change in role: often from being independent to relying on others for care and support

Brain injury can impact every aspect of a person’s life. This includes changes to their independence, abilities, work, and relationships. It is often classified as an invisible disability (meaning no physical signifiers). As a result, people with brain injury often encounter barriers and stigmas, which makes it harder for them to conduct activities of daily living (ADLs) and access supports/services. Brain injury does not affect one’s intelligence and does not change the fact that they are a person first deserving of respect, support, inclusion and fulfilment.

THE PREVALENCE OF BRAIN INJURY IN CANADA

The image of an iceberg is helpful as an analogy for brain injury. There is way more happening below the surface that we cannot easily see.

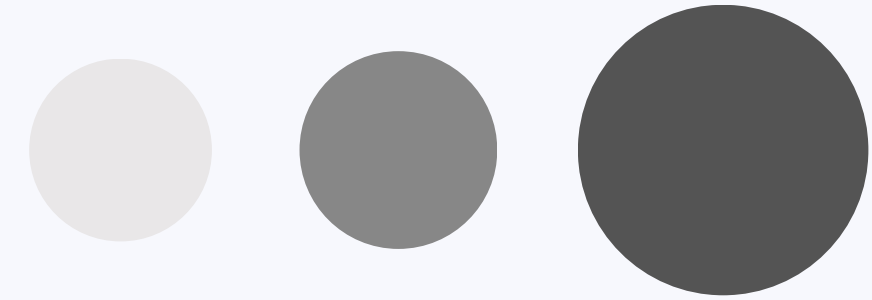


Brain injury is often a progressive, long-term condition affecting cognitive, physical, and emotional health. It impacts not just the individual, but their families and those close to them. Many people with brain injury live stable lives, but are in dire need of accommodations; require ongoing care-based supports; struggle to access timely care; and/or face stigma and marginalization.

It is estimated there are almost 2 million Canadians living with effects of brain injury [2].

456 people suffer a traumatic brain injury every day, or one person injured every 3 minutes in Canada [3].

Each year in Canada...



4,300 new cases of Spinal Cord Injury

4,400 new cases of Multiple Sclerosis

28,600 new cases of breast cancer

165,000 new cases of traumatic brain injury

[4]

This does not include the estimated 400,000 concussions in Canada per year[5], likely underreported due to limited primary care access and long hospital emergency department waits. It also does not include non-traumatic brain injuries such as stroke.

Certain population groups may experience a disproportionate incidence of brain injuries due to various factors, including socioeconomic status, access to health care, and specific risk factors. Examples include:

Older Adults

- Seniors are at increased risk due to falls, which can lead to serious brain injuries and poorer health outcomes.
- Older adults may also have pre-existing cognitive vulnerabilities that can complicate recovery.

Indigenous, First Nations, and Métis Peoples

- This population often experiences higher rates of brain injuries due to systemic barriers, socioeconomic challenges, and higher rates of violence and substance abuse.
- Geographic and cultural barriers can limit access to appropriate care and rehabilitation services.

Low-Income Communities

- Individuals in low-income neighborhoods may face greater risks due to unsafe living conditions, lack of safe recreational spaces, and higher rates of violence.
- Financial barriers can limit access to preventive measures, timely treatment, and long-term support.

Victims of Intimate Partner Violence

- Survivors of IPV are at a higher risk for experiencing traumatic brain injuries, often as a result of physical abuse.
- For females, hormonal factors can affect recovery outcomes.
- Studies show that women might experience more prolonged recovery periods, with higher rates of persistent symptoms, such as headaches and cognitive difficulties, compared to men.

Children and Adolescents

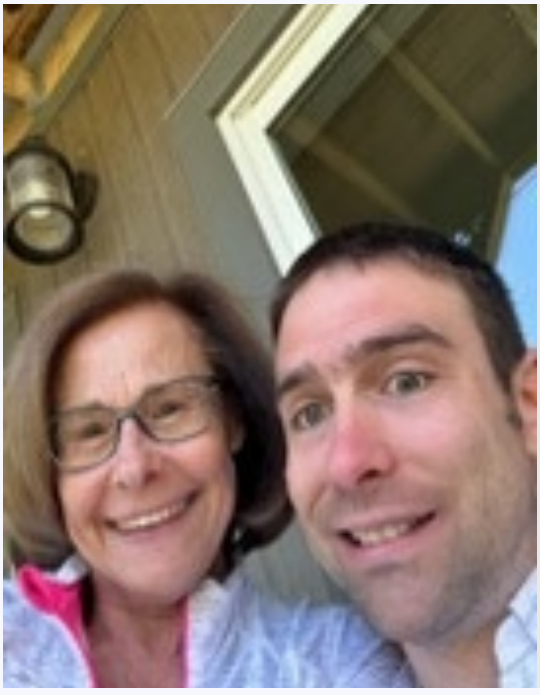
- Young athletes, especially in contact sports like football and hockey, are at higher risk for concussions and other brain injuries.
- Falls, bicycle accidents, and other unintentional injuries are common causes of brain injuries in children.

INTERSECTIONAL IMPACTS OF BRAIN INJURY

Brain injury rarely exists on its own. It is intersectional, which means that it contributes to and is affected by personal circumstances and systemic barriers. When you add in the invisible nature of brain injury, the lack of appropriate services and supports, and lack of awareness, even more barriers are created for individuals who are just striving for the best quality of life.

Current data proves that many Canadians are falling through the cracks of our health, legal, social, and government systems, further demonstrating the need for leadership from the Government of Canada to establish a national strategy on brain injury. We need to look at the whole picture to gain a better understanding of what is happening to individuals and families living with brain injury.

While there are many intersections, this report will focus on a few key areas that demonstrate the need for a national strategy, supported by available data.



My son Justin was seventeen when he suffered a severe traumatic brain injury 16 years ago. Every day is a struggle. You grieve for your loved one all the time. But we made sure Justin did rehabilitation every day. It takes such a toll on the whole family – every day, year after year. Justin can only work a few hours a week, and he needs a support worker with him, but with support, positivity, and love, he is now counselling other people with traumatic brain injuries. –

Suzanne McKenna, mother of Justin McKenna, living with TBI, outside Ottawa

Homelessness

Homelessness is not something that happens quickly and in isolation. There are many effects and circumstances that coalesce into an individual experiencing unstable housing/homelessness. It is rarely a choice.

- A meta-analysis found the lifetime prevalence of any severity of traumatic brain injury (TBI) in individuals experiencing homelessness and marginally housed individuals was 53%. The lifetime prevalence of moderate or severe TBI was 22·25% [6].

- The majority of individuals acquire a first TBI prior to experiencing homelessness, suggesting that brain injury is a risk factor for homelessness. Homelessness has also been found to be a risk factor for subsequent TBIs [7].

- TBIs have been linked to increased mental health problems, physical health problems, and drug problems among those experiencing homelessness [8].

The stigma around homelessness is driven by ignorance and judgement. We need to understand the path to homelessness for those living with brain injury, as it is a critical piece in the prevention strategy.

Legal System

Evidence shows that sustaining a traumatic brain injury (TBI) increases risk of criminal justice system involvement, including incarceration.

- Research showed that incidence of incarceration was higher among participants with prior traumatic brain injury (TBI) compared with those without a prior TBI. Men and women who had sustained a TBI were about 2.5 times more likely to be incarcerated than men and women who had not sustained a TBI [9].
- TBI is more prevalent among males than females in incarcerated populations [10] [11].
- The majority of the incarcerated sample reported having a TBI prior to their first criminal offence [12] [13].
- The average age of first TBI for inmates was 19.6 years for men and 21.9 for women.
    - 55% of women reported TBI prior to first crime.
    - 41% of men reported TBI prior to first crime [14].

Many of the following common cognitive, emotional and behavioural symptoms/impairments can increase the chance of interaction with police and the justice system:

- Lack of impulse control
- Anger management issues
- Inability to initiate which can be perceived as defiance
- Perseveration
- Inappropriate emotional response
- Engagement in high-risk behaviours
- Memory impairments
- Challenges with processing information
- Poor judgment

Toxic Drug Use and Brain Injury

The relationship between brain injury and the opioid crisis in Canada is complex and multifaceted.

Individuals with brain injury may engage in problematic opioid substance use due to:

- Pain management
- Lack of impulse control
- Increased vulnerability, making them more susceptible to misuse and addiction/problematic substance use.

Opioid overdose can lead to brain injury. Individuals who misuse opioids are at higher risk of experiencing initial or subsequent traumatic brain injuries due to:

- Accidents, falls, or violence associated with substance use.
- Hypoxia (lack of oxygen to the brain) during an overdose. Those who survive an overdose may experience cognitive impairments and other neurological issues from brain injury.

Unfortunately, individuals with brain injury and concurrent problematic substance use disorders are often unable to access supports for either condition because of the way they interact with each other. We need low-barrier programs to support individuals with both problematic substance use issues and brain injury.

Jacob Wilson

In August 2018, at age 21, Jacob was hit by a pickup truck as a pedestrian. In the three years that followed he struggled with psychosis and turned to drug use. In November 2021, Jacob died of a fentanyl overdose after having been turned away twice from the hospital in the 48 hours before he died.

His mother Shirley stated "The same healthcare system that rescued him and stabilized him when he was run over, turned him away at the emergency department when they could have saved his life."

Shirley says they felt the healthcare system gave up on Jacob as he was not able to access the long-term care he needed because of his substance use, which was a coping mechanism after his world was forever altered after his accident. He shouldn't have needed to rely on drugs to cope. They were asking for help and there was nowhere to get it.He should have received the care and supports he needed to be able to rebuild his life and live the long life he deserved.

Mental Health

Brain injury can significantly impact emotional and psychological wellbeing. Individuals who experience a brain injury often face challenges such as depression, anxiety, mood swings, and cognitive impairments, which can affect their relationships, work, and overall quality of life. Damage to specific brain regions, such as the frontal lobe, can lead to difficulties in emotional regulation, impulse control, and personality changes. Additionally, the stress of adjusting to life after a brain injury—combined with potential social isolation and physical limitations—can further contribute to mental health struggles.

- In a national population health study of neurological disorders, illness and injury, the highest prevalence of self-reported diagnosed mood disorders was seen in those with a traumatic brain injury (TBI) (38.3%) [15].
- An individual has a significantly greater chance of developing a diagnosable mental illness after sustaining an acquired brain injury (ABI) [16] [17].
- About half of all people with TBI are affected by depression within the first year after injury. Even more (nearly two-thirds) are affected within seven years after injury [18].
- A Canadian longitudinal cohort study found adults with concussion committed suicide at three times the population norm [19].

Recognizing the link between brain injury and mental health is crucial for providing comprehensive care, including psychological support, rehabilitation, and community resources, to help individuals recover and improve their well-being.

Overrepresentation of Brain Injury in Indigenous Peoples

Indigenous, First Nations, and Métis Peoples in Canada are at higher risk of experiencing traumatic brain injury (TBI) compared to the general population.

- Indigenous individuals were 3.4 times more likely to experience a TBI compared to non-Indigenous individuals.
- Injuries are the leading cause of potential years of life lost in Indigenous populations, with rates four times higher than in the rest of Canada [20].
- First Nations, Métis and Inuit peoples are more likely to have high blood pressure and diabetes – both risk factors for stroke. They are at a greater risk of stroke than the general population, and twice as likely to die from it [21].

Unfortunately, while Indigenous populations are much more likely to experience serious brain trauma, they are much less likely to receive appropriate rehabilitation, or have access to other post-discharge programs and services.

This disparity relates to a range of social determinants of health, including [22]:

- Poverty
- Unemployment
- Inadequate housing and access to basic needs
- Lack of access to health care
- Intergenerational trauma
- Systemic geographic and financial barriers
- Cultural and language barriers
- Substance use
- Discrimination, stigma and judgement

Recognizing the chronic nature of brain injury and its intersection with social determinants and Indigenous Peoples is crucial for developing comprehensive health care policies. Such recognition would facilitate continuous care, support, and rehabilitation services, addressing the long-term impacts of TBIs on individuals and their families within Indigenous communities.

Cost to the System

The financial burden of brain injuries is considerable, affecting Canadian healthcare systems, individuals, families, and society.

1. **Direct Health Care Costs:**
    - Initial treatment in hospitals, including emergency room visits and surgeries.
    - On-going rehabilitation for physical, occupational, and speech therapy.
    - Costs associated with nursing homes or specialized care facilities for individuals with severe impairments.
2. **Indirect Costs:**
    - Economic losses from individuals unable to work or requiring extended periods off due to recovery.
    - Financial impacts on family members who may take time off work to provide care.
3. **Societal Impact:**
    - Costs associated with treating mental health issues often linked to brain injuries, such as depression and anxiety.
    - Substance use services
    - Costs related to legal battles, disability claims, and support services.
    - Community supports such as brain injury associations and other community groups providing on-going support

Monitoring long-term costs is challenging as Canada currently does not track the prevalence of brain injury or long-term outcomes, including health care access frequency. However, it is evident that the costs are significant, particularly when looking at the economic impact of caregiving in conjunction with the over 2 million Canadians living with a brain injury. Including tracking and investigation into costs in a national strategy will support the development of interventions related to prevention, rehabilitation and care to help reduce costs over time.

THE CASE FOR A NATIONAL STRATEGY ON BRAIN INJURY

A Coordinated National Approach

A national strategy should include prevention, treatment, rehabilitation, and support services tailored to the needs of individuals with brain injuries and their families. It would facilitate the sharing of best practices and resources among provinces and territories, informing policy and ensuring equitable access to care.

Increased Funding and Research

A dedicated strategy should prioritize funding for brain injury research, prevention programs, and community-based support services, leading to improved outcomes. Investment in research could yield innovative treatments and preventative measures, reducing the incidence and impact of brain injuries.

Public Awareness and Education

A national strategy should promote public awareness campaigns to reduce stigma, improve health outcomes, and enhance understanding and acceptance. Training healthcare professionals in recognizing and managing brain injuries would result in earlier diagnosis and more effective treatment.

Collaboration and Partnerships

A national strategy should encourage collaboration among federal, provincial, and territorial governments, healthcare providers, researchers, and community groups to create a unified response to brain injuries. Engaging individuals and families with lived experience in the development and implementation of the strategy will ensure that it meets the needs of those affected.

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