

## ENVIRONMENTAL SCAN

# Care for Acquired Brain Injury and Concurrent Mental Health Conditions and/or Substance Use Disorders: An Environmental Scan

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## Abbreviations

<b>ABI</b>	acquired brain injury
<b>CHIRS</b>	Community Head Injury Resource Services
<b>LHIN</b>	Local Health Integration Networks
<b>MOHLTC</b>	Ministry of Health and Long-Term Care
<b>nTBI</b>	non-traumatic brain injury
<b>TBI</b>	traumatic brain injury

## Summary

- The overall objectives of this Environmental Scan were to identify Canadian integrated care systems and programs for the care of individuals with acquired brain injury (ABI) and concurrent mental health conditions and/or substance use disorders. A literature search and a survey informed this Environmental Scan. Survey respondents comprised stakeholders involved in planning, decision-making, management, and service provision related to ABI care.
- Determining the care needed for ABI independently from that needed for mental health conditions and/or substance use disorders can be complex in populations experiencing these comorbidities.
- There are numerous types of systems, services, and programs in Canada for individuals with ABI; however, in the presence of mental health and/or substance use comorbidities, the care for these concurrent conditions is usually siloed. Both survey results and literature findings signalled a need for greater integration as key to improving care and patient outcomes.
- Most programs are publicly, provincially, or locally funded. Nevertheless, a small proportion rely on foundational grants and fundraising efforts.
- Areas for improvement were numerous and revolved mostly around funding and resources, timeliness to treatment, and patient access to treatment. Generally, these underscored the need to break down siloed care between agencies, systems, ministries, and funding sources.

## Context

In the context of this Environmental Scan, ABI is defined as damage to the brain that occurs after birth and is not related to congenital disorders, developmental disabilities, or a degenerative disease.<sup>1,2</sup> Brain Injury Canada reports there are an estimated 160,000 new cases of ABI annually, with an estimated national prevalence of 1.5 million cases.<sup>1</sup> ABI is a leading cause of death and disability for Canadians under the age of 40.<sup>3</sup>

ABI refers to both a traumatic brain injury (TBI) and non-traumatic brain injury (nTBI). Common causes of TBI include car accidents, falls, assaults, and sport injuries, whereas seizures, tumours, aneurysm, stroke, oxygen deprivation, infections, and adverse effects of substance abuse are some conditions that can result in nTBI.<sup>1,2</sup> In 2017, it was estimated there were 447 new cases of TBI per 100,000 Canadians,<sup>4</sup> with an estimated national prevalence of 442,623 cases.<sup>5</sup> In the US, it is estimated that between 3.2 million and 5.3 million people are living with a disability as a result of TBI.<sup>6</sup> From a provincial perspective, data collected in Ontario indicate an incidence of 800,000 TBIs between 2002 and 2006.<sup>7</sup> British Columbia has an annual incidence of 22,000 new cases added to the 180,000 prevalent cases.<sup>3,8</sup> For stroke, a form of nTBI, 2017 saw an estimated 181 new cases per 100,000 Canadians,<sup>9</sup> with an estimated national prevalence of 709,411 cases.<sup>10</sup>

Individuals with a TBI can experience a complex combination of impairments that impact both their physical and mental wellbeing, which can persist for years. These adverse effects may include memory, attention, and learning deficits; mood disorders; problems with balance and coordination; headaches; fatigue; and reduced quality of life.<sup>2,6</sup> Moreover, people with ABI can be affected by mental health conditions and/or substance use disorders that existed before, or develop after, the injury. For example, one literature review suggests that as many as 50% to 60% of individuals living with a TBI also have concurrent problems

related to substance use.<sup>11</sup> Similarly, in a systematic review conducted in the US, depression was found to be common among those with TBI, with an estimated prevalence of 33% observed after more than 12 months post-injury.<sup>12</sup> ABI from traumatic and non-traumatic causes is also associated with a substantial economic burden. One study conducted in Ontario found that the provision of health care services to people with ABI in the first year after injury carried a mean cost of \$32,132 per TBI and \$38,018 per nTBI.<sup>13</sup> Authors of a 2012 cohort study estimated the total annual costs for care, in the first year post-injury, to be approximately \$120.7 million for TBI and \$368.7 million for nTBI.<sup>13</sup>

Individuals living with ABI and associated health problems typically require a diverse range of health care services to treat and manage their condition and to address their needs.<sup>13,14</sup> Depending on the severity and degree of persistence of ABI-related symptoms, the care and assistance needed may extend over a period of several years or be lifelong.<sup>7,13,14</sup>

The availability and organization of resources and programs to address the needs of people with ABI varies among jurisdictions and care settings across Canada. To help inform decision-making, CADTH conducted an Environmental Scan to summarize available systems, services, and integrated patient-centred care centres that are in place across Canada.

## Objectives

The key objectives of this Environmental Scan are as follows:

- Identify and describe the systems that are in place to manage the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders in Canada.
- Identify and describe integrated patient-centred care centres that have been implemented in Canada for patients with ABI and concurrent mental health conditions and/or substance use disorders.
- Describe how existing programs and services for ABI are funded.
- Describe unmet needs and known areas for improvement in the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders in Canada.

This Environmental Scan does not include an assessment of the clinical effectiveness or cost-effectiveness of care programs for ABI and concurrent mental health conditions and/or substance use disorders. Thus, conclusions or recommendations about the value of the services or their place in therapy are outside the scope of this report. CADTH has also published a [Summary of Abstracts report](#) on the clinical effectiveness, cost-effectiveness, and guidelines of integrated care models for ABI.<sup>15</sup>

## Methods

The findings of this Environmental Scan are based on a focused literature search and responses received from a survey (Appendix 1) distributed to identified relevant stakeholders across Canada. Table 1 outlines the criteria for information gathering and selection for the literature review.

## Research Questions

The literature review and survey aimed to address the following questions:

- What systems and services are in place in Canadian jurisdictions for the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders?
- What are the integrated patient-centred care centres that exist in Canada for individuals with ABI and concurrent mental health conditions and/or substance use disorders?
- What are current needs and gaps related to the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders?

## Literature Search

A focused literature search was conducted by an information specialist on key resources, including PubMed, PsycINFO via OVID, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy consisted of both controlled vocabulary, such as the National Library of Medicine’s MeSH (Medical Subject Headings), and keywords. The main search concepts were ABI and rehabilitation. No search filters were applied to limit by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2015 and April 12, 2020.

**Table 1: Components for Literature Screening and Information Gathering**

<b>Population</b>	Patients of any age with ABI and concurrent mental health conditions and/or substance use disorders
<b>Intervention</b>	Available interventions that are aimed at addressing the needs of individuals with ABI and concurrent mental health conditions and/or substance use disorders
<b>Settings</b>	<ul style="list-style-type: none"> <li>• Primary and secondary care</li> <li>• Acute care</li> <li>• Rehabilitation</li> <li>• Long-term care</li> <li>• Home care</li> <li>• Urban, rural, and remote</li> </ul>
<b>Types of Information</b>	<ul style="list-style-type: none"> <li>• Identification and understanding of the systems and services that are currently in place in different care settings to address the needs of individuals with ABI and concurrent mental health conditions and/or substance use disorders</li> <li>• Identification of needs and potential improvements in ABI care and services</li> </ul>

## Screening and Study Selection

One author independently screened titles and abstracts for eligibility according to the inclusion criteria outlined in Table 1. Articles that were published in a language other than English or French were excluded. There were no limitations on publication type, except conference abstracts, which were ineligible and excluded due to the limited information available within them.

## Survey

A survey was conducted to address the objectives of the Environmental Scan and complement the literature review. The survey was distributed electronically using SurveyMonkey ([www.surveymonkey.com](http://www.surveymonkey.com)) to key jurisdictional informants and stakeholders involved in planning, decision-making, management, and service provision related to ABI care.

Survey respondents were identified through CADTH Implementation Support and Knowledge Mobilization team networks, and other available networks via stakeholder and expert suggestions. Participants were invited to forward the survey to relevant colleagues. The following categories of respondents were eligible, with the intention of getting representation from each jurisdiction as well as rural, remote, and urban settings:

- clinicians (e.g., physicians, nurses, other specialists) involved in the provision of care to individuals with ABI in relevant health care facilities and settings
- ABI organizations (e.g., Brain Injury Canada, Toronto ABI Network)
- patient stakeholder groups
- researchers, academics, and other experts involved with the ABI topic.

The survey consisted of 33 questions, including questions regarding demographics, characteristics of existing programs, types of patients accepted, integration of mental health and/or substance use care in the program, integration of Indigenous practices, wait times, and unmet needs. A full list of questions is provided in Appendix 1.

The survey questions were piloted within the survey platform interface by independent CADTH researchers who were not involved with the project.

## Synthesis Approach

Feedback from respondents who gave consent to use their survey information were included in the report. Survey responses were excluded if all answers to core questions (other than demographics) were blank, the respondent refused participation, or if consent to use information was not provided.

Responses were analyzed by the objectives of this Environmental Scan, then by jurisdiction where appropriate. In the case of multiple responses from one organization, all responses were included. Quantitative and multiple-choice answers were summarized through tables by jurisdiction and presented narratively. Qualitative (open-ended) answers were categorized using thematic analysis and were also presented through tables and narratively.

Findings from the literature search are presented separately from survey results and summarized narratively.

## Findings

The findings presented are based on literature results and survey responses received and collected by March 25, 2020. The survey was distributed to 32 stakeholders representing six Canadian provinces (i.e., Alberta, British Columbia, Nova Scotia, Ontario, Prince Edward Island, and Saskatchewan) and one federal health care plan. The survey was not distributed to the remaining provinces, territories, and federal health care plans, owing to a lack of identified stakeholders in these jurisdictions, which is acknowledged as a limitation to this

report. Stakeholders were invited to forward the survey to colleagues knowledgeable in this field. Forty respondents attempted the survey, with 22 fulfilling the inclusion criteria (e.g., providing consent, completeness of answers). These 22 respondents represented four jurisdictions, including Alberta, British Columbia, Ontario, and Saskatchewan. The sectors of employment represented were provincial government, academic or research institute, not-for-profit or foundation, and private. The geographical work settings of respondents were urban, rural, and remote. Table 2, Appendix 2 describes additional demographics of survey respondents.

The organizations or facilities represented by the survey respondents engaged with a variety of populations (e.g., adult, adolescent, Indigenous, and homeless), as well as all severity levels and types of ABI (i.e., TBI and nTBI). Table 3 describes additional characteristics of the organization and facilities; Table 4 lists organizations represented by survey respondents.

The literature searches yielded 2,732 citations. Of these, 63 were selected for full-text screening and seven were determined to be eligible to address the research questions. All articles were from authors in Canadian organizations and were published between 1999 and 2020. Reference lists of retained articles were scanned for further potentially eligible citations, and grey literature (e.g., government websites, program websites) were searched.

## **Objective 1: Identify and Describe the Systems That Are in Place to Manage the Care of Individuals With ABI and Concurrent Mental Health Conditions and/or Substance Use Disorders in Canada**

Information on specific programs can be found in Appendix 3 (Table 5, Table 6, Table 7, and Table 8).

### **Survey Results**

Twenty-two survey respondents from four Canadian provinces (Alberta, n = 5; British Columbia, n = 1; Ontario, n = 10; and Saskatchewan, n = 6) provided information on systems and services for individuals with ABI and concurrent mental health conditions and/or substance use disorders. A summary of the existing programs as identified in the survey responses are presented in Table 5, Appendix 3.

Survey respondents indicated that systems and services for mental health conditions and/or substance use disorders with ABI care are currently available in Alberta, British Columbia, Ontario, and Saskatchewan, with five, two, 16, and nine programs, respectively. The characteristics of the individual programs vary; in many cases, the mental health and/or substance use care is a stand-alone program that is offered concurrently to the ABI rehabilitation programs. Nevertheless, examples of services offered include case management (e.g., service coordination and referral), community services, rehabilitation (e.g., occupational therapy, speech and language therapy, physiotherapy, and neurobehavioural rehabilitation), support groups (e.g., peers, family, and caregiver), recreational services, and reintegration programs (e.g., workplace, school, and community).

Although not a direct patient care provider, the Ontario Brain Injury Association provides training (in conjunction with Brock University, St. Catharines, Ontario) and resources to service providers caring for individuals with ABI and concurrent mental health conditions and/or substance use disorders, as well as problem gambling.<sup>16</sup> Similarly, although the

Toronto ABI Network provides system navigation support and referrals to hospital and community programs, they also offer a resolution service that brings the ABI, addiction, mental health, and criminal justice sectors to a common table to create personalized solutions for individuals who become involved in the justice system.<sup>17</sup>

When asked to describe types of inpatient services or consultations for individuals with ABI offered in their facility or jurisdiction, 14 respondents provided no response (63.6%), whereas eight (36.4%) indicated an assortment of services (see Table 6, Appendix 3 for details). Based on the responses of the survey, the inpatient services offered in both Ontario and Saskatchewan are clinical pharmacy, occupational therapy, physiotherapy, and speech-language pathology, while clinical nutrition and nursing are offered in British Columbia, Ontario, and Saskatchewan. Holistic services and social services are offered in both British Columbia and Ontario, and recreational therapy is offered in all four jurisdictions. Case management and individualized programming for patients are offered in Alberta, British Columbia, and Ontario. One respondent from British Columbia indicated that online services or modules, as well as spiritual services, are offered in their jurisdiction, two respondents from Saskatchewan indicated they offer psychiatry, and one respondent from Ontario added that their institution offers behavioural supports and personal care. One respondent from Saskatchewan indicated that they were not aware of all the specifics of their inpatient offering, while a respondent from Ontario indicated that their program did not offer inpatient services.

Similarly, for types of outpatient services for individuals with ABI offered in their facility or jurisdiction, eight respondents provided no response (36.4%), while 14 (63.6%) indicated an assortment of services (see Table 7, Appendix 3 for details). Based on the responses of the survey, clinical nutrition, nursing, individualized programming for patients, and social services are offered as outpatient services in both Ontario and Saskatchewan, while occupational therapy, physiotherapy, and speech-language pathology are offered in British Columbia, Ontario, and Saskatchewan. Psychiatry is offered both in British Columbia and Saskatchewan, while case management and recreation therapy are offered in Alberta, Ontario, and Saskatchewan. One respondent from Saskatchewan added that they offer clinical pharmacy. From Ontario, one respondent indicated they offer holistic services, another indicated they offer online services or modules, and a third added that they offer behaviour consultant and neuropsychiatry. One respondent from Saskatchewan indicated that they were not aware of all the specifics of their outpatient offering.

When describing criteria that patients with suspected or diagnosed ABI must meet to receive ABI services, eight respondents provided no answer (36.4%); and 14 (63.6%) indicated an assortment of responses (see Table 8, Appendix 3 for details). Based on these answers, an assessment (e.g., evaluation or checklist) and the time of the ABI diagnosis are factors present in all four jurisdictions. A referral from a physician or other health care provider is required in Alberta and British Columbia, and the severity of the ABI diagnosis is considered in Alberta, British Columbia, and Saskatchewan. One respondent from Alberta and two from Ontario added that there needed to be a diagnosis of ABI present to access services. Another respondent from Ontario indicated that demographics (e.g., age, geographic location, and willingness to participate in treatment) were also part of their criteria. One respondent from Saskatchewan also indicated that attempting sobriety (e.g., from drugs or alcohol) was a criterion.

## Literature Results

The survey findings are generally in line with the findings from a 2014 mixed methods study of community health care services for ABI in Ontario<sup>18</sup> that reported few organizations were equipped with in-house mental health care staff. However, the study authors identified various models and programs that could effectively be used across the province, such as the Pediatric Acquired Brain Injury Community Outreach Program,<sup>19</sup> Substance Use and Brain Injury bridging project,<sup>20</sup> and community care access centres.<sup>18</sup>

## **Objective 2: Identify and Describe Integrated Patient-Centred Care Centres That Have Been Implemented in Canada for Patients With ABI and Concurrent Mental Health Conditions and/or Substance Use Disorders**

Information on specific programs that integrate care for concurrent mental health conditions and/or substance use disorders can be found in Table 5, Appendix 3.

## Survey Results

Twenty-two survey respondents from four Canadian provinces (Alberta, n = 5; British Columbia, n = 1, Ontario, n = 10; and Saskatchewan, n = 6) provided information on integrated care centres for individuals with ABI and concurrent mental health conditions and/or substance use disorders. A summary of the existing programs as identified in the survey responses are presented in Table 5, Appendix 3.

Survey respondents indicated that programs integrating mental health conditions and/or substance use disorders with ABI care are currently available in Alberta, British Columbia, Ontario, and Saskatchewan. Few programs were reported as having interdisciplinary management of these client populations. Of the five programs identified in Alberta, three were identified as having integrated mental health and/or substance use care, while two were not. Both programs identified in British Columbia were acknowledged as having integrated care. Of the 16 programs identified in Ontario, seven were recognized as having integrated mental health and/or substance use care, an additional one was dependent on the type of program, four programs were not, and the information was not provided for four other programs. Of the nine programs identified in Saskatchewan, one program was identified as having integrated care, five programs were not, and the information was not provided for three other programs.

One example of an integrated care centre is the Community Head Injury Resource Services (CHIRS)<sup>21</sup> program in Toronto, Ontario, which developed the Substance Use and Brain Injury bridging project, facilitating the care of clients living with ABI and problematic substance use.<sup>20</sup> This project introduced treatment alternatives for clients of CHIRS whose cognitive impairments precluded their treatment in mainstream substance use programs. According to the CHIRS website, this was accomplished with close collaboration and cross-training with the Centre for Addiction and Mental Health (CAMH).<sup>20</sup> Additionally, the ABI inpatient program at Hamilton Health Sciences is a provincial centre specialized in neurobehavioural rehabilitation services for individuals with ABI and complex behaviour or mental health conditions.<sup>22</sup>

Sixteen respondents provided a response for questions relating to Indigenous health practices for individuals with ABI and concurrent mental health conditions and/or substance use disorders. Thirteen (Alberta, n = 1; Ontario, n = 6; Saskatchewan, n = 6) of the 16 respondents (81.3%) indicated their facility were involved in the care of Indigenous populations with ABI (Table 3). When asked if there were facilities in their jurisdiction that incorporated Indigenous health practices into their services for individuals with ABI and concurrent mental health conditions and/or substance use disorders, six of 16 respondents indicated “no” (37.5%), four were “not sure” (25.0%), and six indicated “yes” (37.5%). Among the latter, one respondent from Ontario noted that their program partners with local Indigenous health centres to deliver care, and a respondent from Saskatchewan indicated that they incorporate Indigenous health practices upon request; however, the extent of the integration was not clear in either case. Two additional respondents indicated that they are sensitive to all needs (e.g., religious and cultural) across their service offering.

## Literature Results

No literature was identified regarding any specific integrated patient-centred care centres in Canada for individuals with ABI and concurrent mental health conditions and/or substance use disorders.

## Objective 3: Describe How Existing Programs and Services for ABI Care Are Funded

Information on the source of funding for existing programs and services for ABI can be found in Table 5, Appendix 3.

## Survey Results

Twenty-two survey respondents from four Canadian provinces (Alberta, British Columbia, Ontario, and Saskatchewan) provided information on the funding of systems and services for individuals with ABI and concurrent mental health conditions and/or substance use disorders.

Of the five programs identified in Alberta, three were locally funded (e.g., local health authorities, hospitals), two were publicly or provincially funded (one of which also identified fundraising as a funding source). Both programs in British Columbia were identified as being privately funded (one of which was also locally funded). Of the 16 programs identified in Ontario, most indicated receiving multiple sources of funding, including private (n = 2), public or provincial (n = 10), both public and private (n = 3), local funding (n = 9), fee-for-service (n = 2), patient out-of-pocket or third party (n = 1), and foundational grant (n = 2). The information was not provided for two other programs. In Saskatchewan, three programs were identified as being both public and privately funded (one of which was also fee-for-service), two programs were publicly or provincially funded, one was locally funded, and the information was not provided for three other programs.

## Literature Results

The survey findings are generally in line with the findings from a 2014 mixed methods study of community health care services for ABI in Ontario.<sup>18</sup> Their survey results found that five of eight community-based organizations surveyed belonging to the Ontario Association of Community Based Boards for Acquired Brain Injury Services, were funded through the Ontario Ministry of Health and Long Term Care (MOHLTC) by direct payment to the client,

whereas three were funded through the MOHLTC by direct payment to the programs, seven through local health integration networks (LHINs), four through private insurance, seven through automobile insurance, and six via other sources not specified.<sup>18</sup>

In addition, for the nine community-based organizations surveyed that did not belong to the Ontario Association of Community Based Boards for Acquired Brain Injury Services, three were funded through the Ontario MOHLTC by direct payment to the client, all through LHINs, four through private insurance, four through automobile insurance, and three via other sources not specified.<sup>18</sup> Additionally, they surveyed six community care access centres, of which all were funded through LHINs, one received funding through private insurance, and one through automobile insurance. Ten community associations were surveyed, of which two were funded through the Ontario MOHLTC by direct payment to the client, five through LHINs, and nine via other sources not specified.<sup>18</sup> Authors also surveyed nine rehabilitation hospitals (some of which included dedicated rehabilitation hospitals for children) and reported that one was funded through the Ontario MOHLTC by direct payment to the client, two through the Ontario MOHLTC by direct payment to the programs, eight through LHINs, six through private insurance, all through automobile insurance, and three via other sources not specified.<sup>18</sup>

## **Objective 4: Describe Unmet Needs and Known Areas for Improvement in the Care of Individuals With ABI and Concurrent Mental Health Conditions and/or Substance Use Disorders in Canada**

### **Survey Results**

Themes that emerged from the survey included limited funding, limited resources, timeliness to treatment, and patient access to treatment.

Sixteen respondents provided a response to the question relating to treatment delays caused by wait times (Table 3), which are cited as a moderate issue by six respondents (37.5%) or a major issue by three respondents (18.8%). Three respondents indicated it was not an issue (18.8%), whereas four indicated it was a minor issue (25%).

Fifteen respondents provided a response to questions relating to unmet needs or areas for improvement that currently exist in their jurisdiction in caring for patients with ABI. Unmet needs in relation to limited funding or budget, resource implications (e.g., limited staff or alternative health professionals, education), and patient access to treatment or services were identified by all responding jurisdictions. Additionally, timeliness to treatment or services was identified by respondents in Alberta, Ontario, and Saskatchewan. One respondent from Alberta highlighted the need for a model to deal with the behavioural side of treatment for those with ABI who can be termed complex or complicated or may not be engaged in treatment. Another respondent from Alberta, as well as one from Saskatchewan, noted the lack of infrastructure for supporting travel from remote locations as an area for improvement. One other respondent from Saskatchewan identified a lack of suitable options for individuals with ABI who tend to get aggregated with other patient populations, while another respondent from Saskatchewan identified a need to improve medical insurance and wait times. One respondent from Saskatchewan and one from Ontario noted a lack of affordable housing. One respondent from Ontario indicated that the range of services available could be improved (e.g., they indicated all rehabilitation occurs outside their jurisdiction), while another respondent from Ontario suggested that transitions between

acute care centres (e.g., rehabilitation is at one hospital corporation, whereas mental health is at another) as well as transition to the community could be improved.

Furthermore, of the 15 respondents who answered the question relating to current strategies or solutions being considered or implemented for improving the availability of ABI services or programs, four (26.7%) indicated “no,” eight (53.3%) indicated “unsure,” and three (20.0%) indicated “yes.” Of these latter three, one respondent from Ontario specified that collaboration with community agencies (e.g., mental health or addiction) were being considered or implemented, while another respondent from Ontario indicated they had implemented reduced wait time for their outreach services and they were improving access to residential beds. One respondent from Saskatchewan indicated that telehealth was being considered or implemented.

## Literature Results

Although not specific to individuals with concurrent mental health conditions and/or substance use disorders, a 2014 mixed methods study of community and health services for individuals with ABI in Ontario<sup>18</sup> revealed unmet needs from an organizational or provider perspective. Authors found there was a lack of services for children and adolescents, a lack of services for individuals with concurrent mental health conditions, lack of employment services, a gap in care for individuals who are medically unstable or have severe behavioural disorders (i.e., these are usually exclusion criteria for services),<sup>18,23</sup> and a need for organizations to improve tracking of patient outcomes.<sup>18</sup> Authors also underscored the need to break down siloed care between agencies, systems, ministries, and funding sources.<sup>18</sup> This call for integrated care is largely echoed in other publications.<sup>24,25</sup>

A 2019 Canadian study<sup>26</sup> on intimate social relationships in adolescent girls and women with TBI identified that women of all ages with TBI report more symptoms of poor mental health, especially depression and anxiety. As such, authors highlighted the need to provide gender specific support to individuals with TBI as they develop intimate relationships.<sup>26</sup> This is supported by two retrospective cohort studies in Ontario, one in 2017<sup>27</sup> and another in 2016,<sup>28</sup> which identified gender inequalities and vulnerabilities in the clinical profile of individuals with TBI that should be reflected in care programs.

A 2013 qualitative study, based in Toronto, Ontario, on the link between TBI and homelessness identified several areas for improvement in the care of individuals with TBI and concurrent mental health conditions.<sup>23</sup> These included a lack of research upon which to base and develop interventional programs, the difficulty for individuals experiencing homelessness to adhere to specialized programming in shelters while being transient, and poor medical record documentation of brain injuries precluding access to programs that require a diagnosis.<sup>23</sup>

Another area for improvement is the need for effective brain injury prevention programs, underscored by a 2015 study on substance use among adolescents with TBI<sup>29</sup> and the need to inquire about a history of TBI when individuals first present with a substance misuse problem. Shortcomings in preventive efforts are also highlighted by a 2018 study from Quebec evaluating drug use during the first year after TBI.<sup>30</sup> The authors remarked that a greater proportion of persons with mild brain injuries do not receive rehabilitation service or even regular medical follow-up, and are thus possibly not given firm recommendations on substance use,<sup>30</sup> highlighting a need for public education campaigns and screening protocols for all severity levels of ABI.

With regards to Indigenous populations, one 2017 Canadian literature review<sup>31</sup> outlined six social determinants of health associated specifically with TBI in North American Indigenous populations: physical environment (e.g., rural location), gender (e.g., male gender, female gender in the setting of interpersonal violence), personal health practices and coping skills (e.g., substance use, failure to use personal protective equipment), social environment (e.g., interpersonal violence), health services (e.g., availability of rehabilitation services), and social support network (e.g., no family and friend presence during meetings with health care professionals).<sup>31</sup> Identified unmet needs in this population included outpatient physiotherapy, occupational therapy, and long-term care.<sup>31,32</sup> Furthermore, a 1999 Canadian retrospective cohort study of TBI in Indigenous populations<sup>33</sup> identified that initial treatment received, discharge planning, and post-discharge resources offered (e.g., family conferences)<sup>31</sup> were areas for improvement.<sup>33</sup> Furthermore, a 2008 participatory action research study<sup>34</sup> with Aboriginal Elders in Treaty 3 (Northwestern Ontario and Southeastern Manitoba)<sup>35</sup> identified that additional information was needed about mechanisms of injury and the pathophysiology of brain injury and how it is treated from a Western perspective, ways to motivate survivors of brain injury, and financial support for traditional healing.<sup>34</sup> The lack of awareness, education, and resources available in this population are themes echoed by a 2011 Canadian qualitative study.<sup>36</sup> Another Canadian qualitative study identified the need for rehabilitation protocols and discharge planning adapted to Indigenous populations in remote communities, as well as social and travel support.<sup>37</sup>

## Limitations

The findings of this Environmental Scan present a broad overview of care programs for people with ABI and concurrent mental health conditions and/or substance use disorders and are based on a survey and focused literature review. It is not a fully comprehensive review of the topic. There may be ABI programs across Canada that are not well-documented either in the literature or online, and therefore were not captured in this report.

## Methods

The quality of included studies is uncertain because a critical appraisal of the literature was not conducted and because of the broad inclusion of publication types. Surveys were sent to stakeholders identified by CADTH, and it is likely that not all relevant stakeholders were identified and contacted. This could potentially create a gap in valuable information regarding ABI care programs.

## Survey Results

The survey respondents identified through the CADTH Implementation Support and Knowledge Mobilization team networks and other available networks via stakeholder and expert suggestions did not identify stakeholders in all Canadian jurisdictions. The survey was sent out to 32 representatives in six Canadian provinces and one federal health care plan; however, 22 respondents representing four jurisdictions were captured in the survey results. In addition, not all respondents provided a response to all questions. Hence, the information was obtained from a small sample and is not representative of all provinces and territories, a primary limitation of this report. As well, respondents were only able to speak on behalf of their own program and may not have been able to fully comment on other programs. The responses to the survey also reflect personal experiences with ABI systems in their jurisdiction and may not reflect all systems.

## Literature

Specific literature and information regarding integration of program and services and the admission criteria and prioritization of recipients of ABI treatment were lacking. Literature was largely regarding Ontario programs and services, while literature discussing other Canadian jurisdictions was not identified. The literature spanned 20 years. Additionally, there was a lack of information available regarding integrated patient care centres that are based on Indigenous practices to manage the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders.

## Conclusions and Implications for Decision or Policy-Making

This Environmental Scan was informed by literature searches and survey responses.

Although there are systems and services in place to manage the care of individuals with ABI and concurrent mental health conditions and/or substance use disorders in Canada, there is limited integration between those services. In many cases, the mental health and/or substance use care is a stand-alone program that is offered in addition to the ABI programming. Literature results generally align with the survey results; however, it should be noted that systems and services from a limited number of jurisdictions were captured by the survey and may not accurately reflect services offered elsewhere in Canada.

The survey results highlighted that while mental health and substance use services do exist, there is a need for effective integration between agencies, systems, ministries, and funding sources, given the needs of individuals with ABI and concurrent mental health conditions and/or substance use disorders. Some community associations have recognized the needs of this unique population and have begun collaborations and cross-training their health care staff between these care sectors. In cases where there is incorporation of Indigenous health practices, it was noted that some programs partner with local Indigenous health centres to deliver care; however, the extent of the integration was not clear.

Most programs are publicly, provincially, or locally funded. However, a small proportion rely on foundational grants and fundraising efforts.

Unmet needs and known areas for improvement that emerged from the survey generally included limited funding, limited resources, timeliness to treatment, and patient access to treatment. This aligned with the literature findings, which also highlighted a greater need to break down siloed care in the management of individuals with ABI and concurrent mental health conditions and/or substance use disorders. Another area for improvement was brain injury awareness and prevention programs among the general population and health care practitioners. For the latter, enhanced screening programs would help disentangle ABI from many other factors, particularly in cases where the patient first presents with a mental health condition and/or substance use disorder.

The limitations of this report, particularly the lack of representation from all Canadian provinces and territories, should be considered when interpreting the results. Further work that evaluates the implementation of integrated care for patients with ABI and concurrent mental health conditions and/or substance use disorders may provide additional insight into the complexities of the interventions. Alternative approaches to information gathering as well as opportunities for broader engagement and enhanced communication and collaboration among relevant stakeholders involved in the delivery of care for individuals with ABI and concurrent mental health conditions and/or substance use disorders may provide guidance for future research and understanding of this area.

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## Appendix 1: Environmental Scan Survey: Programs for the Care of Acquired Brain Injury and Concurrent Mental Health and/or Substance Use Issues

### Consent Form

Thank you for your interest in contributing to a CADTH report. Your input is needed and highly valuable, as it will inform decision-making on the management of health technologies in Canada. The purpose of this survey is to gather information that will be used to prepare a CADTH Environmental Scan report, which will be published on the CADTH website.

Your participation in this survey is voluntary. You may choose not to participate, or you may exit the survey at any time without penalty. It should take approximately 20 minutes to complete.

Your identifiable private information will be kept confidential. This consent form does not give CADTH permission to disclose your name. If any direct quotes from the survey results are required, respondents will be contacted separately for a signed personal communication form before publishing.

CADTH will summarize your responses in the published report and your organization may be identified as a source. However, you and (if applicable) the organization you represent are not responsible for the analyses, conclusions, opinions, and statements expressed by CADTH.

For detailed information on the purpose of this Environmental Scan entitled **Care for Acquired Brain Injury and Concurrent Mental Health and Substance Use Issues: An Environmental Scan**, please see the invitation email from Bert Dolcine ([bertd@cadth.ca](mailto:bertd@cadth.ca)).

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the “Agree” button below indicates that:

- you have read the aforementioned information
- you voluntarily agree to participate
- you authorize CADTH to use the information provided by you for the purpose as stated in this form.

If you do not wish to participate in the survey, please decline participation by clicking on the “Disagree” button.

Agree

Disagree

Name:

Title:

Organization:

Province:

## Survey Questionnaire

### A. Care Types and Settings for Acquired Brain Injury

1. Are you involved in any capacity with the topic of acquired brain injury (ABI) (e.g., research, service provision, policy-making, advocacy)?

- Yes
- No

If no, please exit the survey.

2. Are you currently involved in any capacity with **care** for ABI?

- Yes
- No

If no, please exit the survey.

3. What is your profession, occupation, or title?

- Policy-maker
- Researcher
- Health care provider (e.g., physician, nurse, etc.)
- Member of patient support group, community association, community-based organization
- Other (please specify):

4. Describe your role and how it serves those patients with ABI.

5. Do you work in one or more of these **health care** settings? (Select all that apply.)

- Primary care
- Secondary or tertiary care
- Rehabilitation care
- Long-term care
- Home care
- None of these settings
- Other (please specify):

6. Do you work in one or more of these types of facilities? (Select all that apply.)

- Stand-alone private facility (e.g., rehabilitation services, only)
- Stand-alone public facility
- Multidisciplinary ABI services treatment facility (stand-alone)
- Multidisciplinary ABI services treatment facility (affiliated)
- Public academic hospital
- Public community hospital
- Health care research institute
- Community health care facility (e.g., public health clinic, family health team)
- None of these facilities

Other (please specify):

7. To your knowledge, what are the current programs or services for the care of individuals with ABI offered in your jurisdiction or facility?

Program or service A \_\_\_\_\_ Website link A \_\_\_\_\_

Program or service B \_\_\_\_\_ Website link B \_\_\_\_\_

Program or service C \_\_\_\_\_ Website link C \_\_\_\_\_

8. Please fill out the table that follows to provide more information on each program or service identified in Question #6.

Name of program or service	How is the program or service funded? (Select all that apply.)						Does the program or service incorporate mental health care and care regarding substance issues for people with ABI?	
	Publicly or provincially funded (e.g., Ministry of Health and Long-Term Care)	Locally funded (e.g., local health authorities, hospitals)	Private	Both public and private	Patient out-of-pocket/ third party	Foundational, grant	Yes	No
Program or service A								
Program or service B								
Program or service C								

If any other source of funding for a program or service is received, provide details here.

## B. Programs and Services for Acquired Brain Injury

The following section and questions aim to collect more details (e.g., patient population served, type of ABI services offered, etc.) about *existing* programs and services for ABI. The section is geared toward those respondents who are directly involved in providing *current* programs and services for individuals with ABI or toward those helping individuals with ABI receive services. If the section and questions do not apply to your profession or occupation, please proceed to next section. However, if you have any knowledge or experience regarding *current* programs and services for ABI and would like to fill out the following section, we welcome your input.

9. Do you wish to respond to the questions in this section about current programs and services for ABI?

- Yes
- No (Continue to next section.)

10. What population(s) with ABI does your facility or work involve? (Select all that apply.)

- Adolescent population
- Adult population
- Indigenous population
- Homeless population
- Veterans
- Accident survivors
- Survivors of family/domestic violence
- Athletes
- Incarcerated population
- Other (please specify):

11. What types of patients do you provide brain injury services to? (Select all that apply.)

- Mild traumatic brain injury
- Moderate traumatic brain injury
- Severe traumatic brain injury
- Mild *non-traumatic* brain injury
- Moderate *non-traumatic* brain injury
- Severe *non-traumatic* brain injury
- Other (please specify):

12. In caring for individuals with ABI, does your facility or jurisdiction offer services or programs for those with mental health conditions? (Select one option.)

- Yes
- No
- Unsure

If no, is your facility or jurisdiction *planning* to offer services or programs for individuals with ABI and a concurrent mental health condition?

- Yes (please specify):

No (please specify):

Unsure

13. In caring for individuals with ABI, does your facility or jurisdiction offer services or programs for those with substance use issues? (Select one option.)

Yes

No

Unsure

If no, is your facility or jurisdiction *planning* to offer services or programs for individuals with ABI and concurrent substance use issues?

Yes (please specify):

No (please specify):

Unsure

14. What type of *in-patient* services or consultations are offered in your facility or jurisdiction for individuals with ABI? (Select all that apply.)

Clinical nutrition

Holistic services

Clinical pharmacy

Nursing

Occupational therapy

Physiotherapy

Physiatry

Psychology

Speech-language pathology

Case management (e.g., coordination of care)

Online services or modules (e.g., Internet cognitive behavioural therapy)

Recreation therapy

Individualized programming for patients

Social services

Spiritual services

Other (please specify):

15. What type of *outpatient* services are offered in your facility or jurisdiction for individuals with ABI? (Select all that apply.)

Clinical nutrition

Holistic services

Clinical pharmacy

Nursing

Occupational therapy

Physiotherapy

Physiatry

Psychology

- Speech-language pathology
  - Case management (e.g., coordination of care)
  - Online services or modules (e.g., Internet cognitive behavioural therapy)
  - Recreation therapy
  - Individualized programming for patients
  - Social services
  - Spiritual services
  - Other (please specify):
16. Are there facilities in your jurisdiction that incorporate Indigenous health practices into their services for individuals with ABI and concurrent mental health and/or substance use issues?
- Yes (please specify):
  - No
  - Unsure
17. In your jurisdiction or facility, are wait times an issue for access to ABI services or programs? Please choose only **one** of the following:
- Not an issue
  - Minor issue
  - Moderate issue
  - Major issue
18. For *in-patient* services, approximately how many ABI patients can your facility care for (at one time)?
- 0 to 50
  - 51 to 100
  - 101 to 150
  - More than 150
19. For *outpatient* services, approximately how many ABI patients can your facility care for (at one time)?
- 0 to 50
  - 51 to 100
  - 101 to 150
  - More than 150
20. In your facility or jurisdiction, is there any specific criteria that a patient with suspected or diagnosed ABI must meet to receive ABI services or programs?
- Referral from physician or other health care provider
  - Assessment or criteria
  - Severity of ABI diagnosis
  - Time of ABI diagnosis
  - Other (please specify):

## C. Policies, Frameworks, and Challenges

21. Are there any frameworks, policies, or guidelines in your facility or jurisdiction to guide the care of individuals with ABI? (Please describe.)

Write your answer here.

Upload any available document related to your response.

22. What are the unmet needs and/or areas for improvement that currently exist in your jurisdiction for the care of patients with ABI? (Select all that apply.)
- Limited funding/budget
  - Resource implications (e.g., limited staff or alternative health professionals, education)
  - Timeliness to treatment or services
  - Patient access to treatment or services
  - Other (Please specify.)

23. In your jurisdiction, are there any current strategies or solutions being considered or implemented for improving the availability of ABI services or programs?

Yes

Explain your answer here.

No

Unsure

## D. Organization Demographics

24. Which jurisdiction do you work in? (Select one option.)

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
- Northwest Territories
- Nova Scotia
- Nunavut
- Ontario
- Prince Edward Island
- Quebec
- Saskatchewan
- Yukon
- Federal

25. Do you work in one or more of these sectors or areas? (Select all that apply.)

- Provincial government
- Municipal government
- Academic or research institute
- Not-for-profit, foundation
- None of these sectors or areas
- Other (please specify):

26. Do you work in one or more of these geographical settings? (Select all that apply.)

- Urban (i.e., area with no fewer than 400 persons per square kilometre and an overall population of at least 1,000 inhabitants)
- Rural (i.e., not fitting the definition of “urban” or “remote”)
- Remote (see below)

(Please self-identify based on your understanding of the criteria for remote. As an example, Health Canada defines various levels of remote, ranging from remote isolated = no scheduled flights or road access and minimal telephone or radio service, through to non-isolated remote = road access and less than 90 km away from physician services.)

## Appendix 2: Information on Survey Respondents

**Table 2: Demographics of Survey Respondents**

Demographic items	Responses, N = 40
Analytical sample	<ul style="list-style-type: none"> <li>Included: n = 22</li> <li>Excluded (e.g., no consent provided, answers to core questions were blank, refused participation): n = 18</li> </ul>
Jurisdictions	<ul style="list-style-type: none"> <li>AB: n = 5</li> <li>BC: n = 1</li> <li>ON: n = 10</li> <li>SK: n = 6</li> </ul>
Sector of employment <sup>a</sup>	<ul style="list-style-type: none"> <li>Provincial government: n = 9</li> <li>Academic or research institute: n = 1</li> <li>Not-for-profit, foundation: n = 6</li> <li>Other: Private (n = 1)</li> <li>No response: n = 5</li> </ul>
Profession, occupation, or title <sup>a</sup>	<ul style="list-style-type: none"> <li>Policy-maker: n = 3</li> <li>Researcher: n = 2</li> <li>Health care provider: n = 9</li> <li>Member of patient support group, community association, community-based organization: n = 6</li> <li>Other: Provincial health department (n = 1); service access and transitions leader (n = 1); health educator (n = 2); executive director (n = 3); program coordinator (n = 1); manager (n = 1).</li> </ul>
Health care setting <sup>a</sup>	<ul style="list-style-type: none"> <li>Primary care: n = 4</li> <li>Secondary or tertiary care: n = 3</li> <li>Rehabilitation care: n = 6</li> <li>Long-term care: n = 2</li> <li>Home care: n = 5</li> <li>None of these: n = 4</li> <li>Other: Provincial health department (n = 2); community service (n = 9)</li> </ul>
Location(s) or site(s) where the respondent currently works <sup>a</sup>	<ul style="list-style-type: none"> <li>Stand-alone private facility: n = 4</li> <li>Stand-alone public facility: n = 2</li> <li>Multidisciplinary ABI services treatment facility (stand-alone): n = 2</li> <li>Multidisciplinary ABI services treatment facility (affiliated): n = 2</li> <li>Public academic hospital: n = 2</li> <li>Public community hospital: n = 5</li> <li>Health care research institute: n = 1</li> <li>Community health care facility: n = 3</li> <li>None of these: n = 5</li> <li>Other: Provincial health department (n = 2); private not-for-profit organization (n = 2); local health integration network (n = 1); home care (n = 1)</li> </ul>
Geographical setting <sup>a</sup>	<ul style="list-style-type: none"> <li>Urban: n = 15</li> <li>Rural: n = 9</li> <li>Remote: n = 2</li> </ul>

<sup>a</sup> Multiple choices were possible for this answer.

**Table 3: Characteristics of Survey Respondent’s Organizations or Facilities**

Demographic items	Responses
Type(s) of population(s) that the facility works with <sup>a</sup>	<ul style="list-style-type: none"> <li>• Adolescent population: n = 7</li> <li>• Adult population: n = 16</li> <li>• Indigenous population: n = 13</li> <li>• Homeless population: n = 13</li> <li>• Veterans: n = 12</li> <li>• Accident survivors: n = 15</li> <li>• Survivors of family/domestic violence: n = 15</li> <li>• Athletes: n = 14</li> <li>• Incarcerated population: n = 7</li> <li>• Other: individuals diagnosed with moderate to severe brain injury (n = 1); falls (n = 1); individuals over the age of 16 (n = 1)</li> </ul>
Type(s) of patient(s) that services are provided to <sup>a</sup>	<ul style="list-style-type: none"> <li>• Mild traumatic brain injury: n = 14</li> <li>• Moderate traumatic brain injury: n = 17</li> <li>• Severe traumatic brain injury: n = 14</li> <li>• Mild non-traumatic brain injury: n = 13</li> <li>• Moderate non-traumatic brain injury: n = 16</li> <li>• Severe non-traumatic brain injury: n = 14</li> <li>• Other: stroke (n = 1)</li> </ul>
Facility or jurisdiction offering services or programs for individuals with ABI with concurrent mental health conditions	<ul style="list-style-type: none"> <li>• No response: n = 5</li> <li>• Unsure: n = 2</li> <li>• Yes: n = 13</li> <li>• No: n = 2                             <ul style="list-style-type: none"> <li>○ If no, is the facility or jurisdiction planning to offer such services:                                     <ul style="list-style-type: none"> <li>Unsure: n = 2</li> </ul> </li> </ul> </li> </ul>
Facility or jurisdiction offering services or programs for individuals with ABI with concurrent substance use issues	<ul style="list-style-type: none"> <li>• No response: n = 5</li> <li>• Unsure: n = 1</li> <li>• Yes: n = 9</li> <li>• No: n = 7                             <ul style="list-style-type: none"> <li>○ If no, is the facility or jurisdiction planning to offer such services:                                     <ul style="list-style-type: none"> <li>▪ Unsure: n = 4</li> <li>▪ No: n = 2</li> <li>▪ No response: n = 1</li> </ul> </li> </ul> </li> </ul>
Are wait times an issue for access to ABI services or programs	<ul style="list-style-type: none"> <li>• Not an issue: n = 3</li> <li>• Minor issue: n = 4</li> <li>• Moderate issue: n = 6</li> <li>• Major issue: n = 3</li> <li>• No response: n = 6</li> </ul>
Number of patients that the facility can care for at one time, for inpatient services	<ul style="list-style-type: none"> <li>• 0 to 50: n = 7</li> <li>• 51 to 100: n = 1</li> <li>• 101 to 150: n = 1</li> <li>• More than 150: n = 0</li> <li>• No response: n = 13</li> </ul>
Number of patients that the facility can care for at one time, for outpatient services	<ul style="list-style-type: none"> <li>• 0 to 50: n = 7</li> <li>• 51 to 100: n = 2</li> <li>• 101 to 150: n = 2</li> <li>• More than 150: n = 2</li> <li>• No response: n = 9</li> </ul>

Demographic items	Responses
Presence of frameworks, policies, or guidelines in the facility or jurisdiction to guide the care of individuals with ABI	<ul style="list-style-type: none"> <li>• Yes: n = 10</li> <li>• No: n = 6</li> <li>• No response: n = 6</li> </ul>

<sup>a</sup> Multiple choices were possible for this answer.

**Table 4: Organizations Represented by Survey Respondents**

Province or territory	Organization
Saskatchewan <sup>a</sup>	<ul style="list-style-type: none"> <li>• Saskatchewan Ministry of Health</li> </ul>
Alberta <sup>b</sup>	<ul style="list-style-type: none"> <li>• Government of Alberta</li> <li>• Blue Heron Support Services Association</li> </ul>
Ontario <sup>c</sup>	<ul style="list-style-type: none"> <li>• Ontario Brain Injury Association</li> <li>• Mackenzie Health</li> <li>• Connect-Communities</li> <li>• Local health integration networks</li> <li>• March of Dimes</li> <li>• Brain Injury Services</li> </ul>
British Columbia	<ul style="list-style-type: none"> <li>• Bill's Place Support Services</li> </ul>

<sup>a</sup> One respondent from Saskatchewan did not indicate the organization they represented.

<sup>b</sup> Three respondents from Alberta did not indicate the organization they represented.

<sup>c</sup> Three respondents from Ontario did not indicate the organization they represented.

## Appendix 3: Identified Programs Available in Canada

**Table 5: Canadian Programs Identified by Survey Respondents for Care of ABI in People Experiencing Concurrent Mental Health Conditions and/or Substance Use Disorders**

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
AB	Alberta Brain Injury Supports <sup>38</sup>	<ul style="list-style-type: none"> <li>• Service coordination</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	No
AB	Calgary Brain Injury Program <sup>39</sup>	<ul style="list-style-type: none"> <li>• Service coordination</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> </ul>	Yes	Yes
AB	Halvar Jonson Centre for Brain Injury; <sup>40</sup> Centennial Centre for Mental Health and Brain Injury	<ul style="list-style-type: none"> <li>• Inpatient long-term rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> </ul>	Yes	No
AB	Pediatric Brain Injury Rehabilitation Program; <sup>41</sup> Glenrose Rehabilitation Hospital	<ul style="list-style-type: none"> <li>• Follow-up assessment and monitoring of rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> </ul>	Yes	Yes
AB	Supported Community Living; <sup>42</sup> Blue Heron Support Services Association	<ul style="list-style-type: none"> <li>• Overnight, in-home support</li> <li>• Living Independently for Everyone (LIFE) program (e.g., community access, employment support, recreation, children’s service)</li> <li>• Caregiver respite</li> <li>• Service coordination</li> <li>• Support groups</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded fundraising</li> </ul>	No	Yes
BC	Bill’s Place Support Services <sup>43</sup>	<ul style="list-style-type: none"> <li>• Residential support</li> <li>• Transitional support</li> <li>• Supported independent living</li> <li>• Mentorship program</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> <li>• Private</li> </ul>	Yes	Yes
BC, ON	CONNECT Communities <sup>44</sup>	<ul style="list-style-type: none"> <li>• Residential condo program</li> <li>• Therapy (e.g., nursing, occupational therapy, physiotherapy, speech-language pathology, medicine)</li> </ul>	<ul style="list-style-type: none"> <li>• Private</li> </ul>	Yes	Yes

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
		<ul style="list-style-type: none"> <li>• Outreach program (CONNECT at home)</li> </ul>			
ON	Acquired Brain Injury Behaviour Service, <sup>45</sup> West Park Healthcare Centre	<ul style="list-style-type: none"> <li>• Inpatient rehabilitation (e.g., rehabilitation therapy, social work, psychological, physiotherapy, occupational therapy)</li> <li>• Community outreach behavioural rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	NR
ON	Brain Injury Association Peterborough Region <sup>46</sup>	<ul style="list-style-type: none"> <li>• Case management</li> <li>• Community support services (e.g., planning for living arrangements, support of independent living, referring to community services)</li> <li>• Day services (e.g., recreation, learning)</li> <li>• Peer support</li> <li>• Transitional support</li> <li>• System navigation</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> <li>• Both public and private</li> </ul>	Yes	No
ON	Brian Injury Services Muskoka Simcoe <sup>47</sup>	<ul style="list-style-type: none"> <li>• Adult day services (e.g., socialization, brain education and exercise, health wellness, caregiver respite)</li> <li>• Community programs (e.g., return to school/work/leisure, increasing independence, transitional support)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	No
ON	Community Head Injury Resource Services <sup>21</sup>	<ul style="list-style-type: none"> <li>• Adult day services (e.g., social, recreation, and skill building programs)</li> <li>• Clinical groups (e.g., dialectical behaviour therapy, cognitive compensation technologies for ABI, living well with a brain injury, positive psychology, substance abuse, and brain injury)</li> <li>• Community Support Services (e.g., medical management, household</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> <li>• Fee-for-service</li> </ul>	Yes	Yes

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
		<p>management, employment support, neurobehavioural intervention)</p> <ul style="list-style-type: none"> <li>• Residential services</li> <li>• Neuropsychological and neuropsychiatric services</li> </ul>			
ON	Hamilton Brain Injury Association <sup>48</sup>	<ul style="list-style-type: none"> <li>• Support groups</li> <li>• Community programs (e.g., prevention education, recreational, peer support mentoring, caregiver and family support)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	No
ON	Head Injury Rehabilitation Ontario <sup>49</sup>	<ul style="list-style-type: none"> <li>• Residential services</li> <li>• Community services (e.g., skill training, crisis management, referral to community resources, recreation, clinical services)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> <li>• Locally funded</li> <li>• Private</li> <li>• Both public and private</li> <li>• Patient out-of-pocket or third party</li> </ul>	Yes	No
ON	Inpatient ABI program, <sup>22</sup> Hamilton Health Sciences	<ul style="list-style-type: none"> <li>• Neurobehavioural rehabilitation service for individuals with ABI and complex behaviour and/or mental health conditions</li> <li>• Community reintegration program</li> <li>• Slow to recover program</li> </ul>	<ul style="list-style-type: none"> <li>• NR</li> </ul>	Yes	Yes
ON	March of Dimes Canada <sup>50</sup>	<ul style="list-style-type: none"> <li>• Case management</li> <li>• Rehabilitation</li> <li>• Attendant care</li> <li>• Programs (e.g., daily living skills, communication, community orientation and integration, emotional and behavioural support, life skills training, vocational support, recreation opportunities)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> <li>• Fee-for-service</li> </ul>	Yes	Yes

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
ON	North Simcoe Muskoka Acquired Brain Injury Collaborative <sup>51</sup>	<ul style="list-style-type: none"> <li>• In-home rehabilitation support and/or nursing</li> <li>• Specialized clinical services to support community integration</li> <li>• Support for independence and community integration</li> <li>• Peer support and socialization opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> <li>• Locally funded</li> </ul>	Yes	Yes
ON	Ontario Brain Injury Association <sup>16</sup>	<ul style="list-style-type: none"> <li>• Helpline (e.g., patient support, caregiver support, referral to community services)</li> <li>• Online concussion support group</li> <li>• Online caregiver support group</li> <li>• Peer support program</li> </ul>	<ul style="list-style-type: none"> <li>• Foundational grant</li> <li>• Both public and private</li> <li>• Locally funded</li> </ul>	Yes	Yes (program dependent)
ON	Outpatient neurological rehabilitation; <sup>52</sup> Southlake Regional Health Centre	<ul style="list-style-type: none"> <li>• Hospital-based outpatient rehabilitation program</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	No	NR
ON	Regional Rehabilitation Centre; <sup>53</sup> Hamilton Health Sciences	<ul style="list-style-type: none"> <li>• Inpatient               <ul style="list-style-type: none"> <li>○ Neurobehavioural rehabilitation service</li> <li>○ Community reintegration program</li> <li>○ Slow to recover program</li> </ul> </li> <li>• Outpatient               <ul style="list-style-type: none"> <li>○ Neurology, physiatry, neuropsychology</li> <li>○ Outreach service (e.g., rehabilitation therapist)</li> <li>○ Crisis management</li> </ul> </li> <li>• Community services (e.g., rehabilitation therapy, neuropsychological assessment, neuropsychological counselling)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	NR
ON	Toronto ABI network <sup>17</sup>	<ul style="list-style-type: none"> <li>• Referral to inpatient programs</li> <li>• Referral to outpatient ambulatory care programs</li> </ul>	<ul style="list-style-type: none"> <li>• NR</li> </ul>	Yes	Yes

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
		<ul style="list-style-type: none"> <li>• Referral to community-based services (e.g., mental health, recreational, vocational and supportive housing programs)</li> </ul>			
ON	Toronto Rehabilitation Institute; <sup>54</sup> University Health Network	<ul style="list-style-type: none"> <li>• Telephone follow-up supporting community transition post-ABI rehab</li> </ul>	<ul style="list-style-type: none"> <li>• Foundational grant</li> </ul>	Yes	NR
ON	York-Simcoe Brain Injury Services, <sup>55</sup> (a partnership between Mackenzie Health's Centre for Behaviour Health Sciences and March of Dimes Canada)	<ul style="list-style-type: none"> <li>• Case management</li> <li>• Rehabilitation support</li> <li>• Adult day program (not ABI specific)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> <li>• Locally funded</li> </ul>	Yes (program dependent)	Yes
SK	ABI Partnership Project <sup>56</sup>	<ul style="list-style-type: none"> <li>• 36 programs (e.g., support services, community residential program, injury prevention, case management, rehabilitation, therapy, vocational training, education, crisis management service, employment support, life enrichment)</li> <li>• Service coordination</li> </ul>	<ul style="list-style-type: none"> <li>• Both public and private</li> <li>• Fee-for-service</li> </ul>	Yes (program dependent)	No
SK	ABI programs; <sup>57</sup> SaskAbilities	<ul style="list-style-type: none"> <li>• Community support (e.g., independent living assistant, community referrals, recreation)</li> <li>• Aboriginal community support</li> </ul>	<ul style="list-style-type: none"> <li>• NR</li> </ul>	Yes	NR
SK	Life Without Barriers; <sup>58</sup> Society for the Involvement of Good Neighbours	<ul style="list-style-type: none"> <li>• In-home support (e.g., home management, financial assistance, accommodation assistance, personal care, medication management, nutritional assistance, cognitive growth, system navigation)</li> <li>• Community support</li> <li>• Group support</li> </ul>	<ul style="list-style-type: none"> <li>• NR</li> </ul>	Yes	NR

Jurisdictional availability	Organization or program name	Services offered	Source of funding	Program is specific to acquired brain injury	Integrates mental health and/or substance use care
SK	Lloydminster & Area Brain Injury Society <sup>59</sup>	<ul style="list-style-type: none"> <li>• Life enrichment program (e.g., recreational and social activities)</li> <li>• Outreach service</li> <li>• Support groups</li> <li>• Referrals to community services (e.g., medical, transportation, employment, counselling)</li> <li>• Public awareness (e.g., prevention education)</li> </ul>	<ul style="list-style-type: none"> <li>• Both public and private</li> </ul>	Yes	No
SK	Outpatient Therapy; <sup>60</sup> Saskatchewan Health Authority	<ul style="list-style-type: none"> <li>• Outpatient therapy (e.g., occupational therapy, physical therapy, speech and language pathology services)</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	Yes	No
SK	Pearl program; <sup>61</sup> Phoenix Residential Society	<ul style="list-style-type: none"> <li>• Onsite supported living (e.g., supervision, interpersonal skills, wellness skills, physical health management, medication management)</li> <li>• In-home support</li> </ul>	<ul style="list-style-type: none"> <li>• NR</li> </ul>	Yes	NR
SK	Rehabilitation Day Service; <sup>62</sup> Saskatoon City Hospital	<ul style="list-style-type: none"> <li>• Outpatient therapy: occupational therapy, physical therapy, recreation therapy, speech and language pathology services</li> </ul>	<ul style="list-style-type: none"> <li>• Publicly or provincially funded</li> </ul>	No	No
SK	Saskatchewan Association for the Rehabilitation of the Brain Injured <sup>63</sup>	<ul style="list-style-type: none"> <li>• Psychosocial rehabilitation</li> <li>• Recreation services</li> </ul>	<ul style="list-style-type: none"> <li>• Both public and private</li> </ul>	Yes	Yes
SK	Stroke Rehabilitation Clinic; <sup>64</sup> Battlefords Union, Prairie North, and Meadow Lake Hospitals	<ul style="list-style-type: none"> <li>• Rehabilitation (e.g., physiotherapy, occupational therapy, speech and language therapy, chronic disease nurse)</li> <li>• Case coordination</li> <li>• Dietetics</li> <li>• Social work</li> </ul>	<ul style="list-style-type: none"> <li>• Locally funded</li> </ul>	Yes	No

AB = Alberta; ABI = acquired brain injury; BC = British Columbia; NR = not reported; ON = Ontario; SK = Saskatchewan.

This list of programs is based on information provided by Canadian stakeholders who participated in the survey. This list is not comprehensive, and this information is subject to change as the field develops.

**Table 6: Jurisdictions Offering Types of Inpatient Services for Individuals With ABI**

Type of inpatient services	Jurisdictional availability			
	AB <sup>a</sup>	BC <sup>a</sup>	ON <sup>b</sup>	SK <sup>c</sup>
Clinical nutrition		X	X	X
Holistic services		X	X	
Clinical pharmacy			X	X
Nursing		X	X	X
Occupational therapy			X	X
Physiotherapy			X	X
Physiatry				X
Speech-language pathology			X	X
Case management	X	X	X	
Online services or modules		X		
Recreation therapy	X	X	X	X
Individualized programming for patients	X	X	X	
Social services		X	X	
Spiritual services		X		
Other: Behavioural supports, personal care			X	

AB = Alberta; ABI = acquired brain injury; BC = British Columbia; ON = Ontario; SK = Saskatchewan.

<sup>a</sup> One respondent represented from that jurisdiction.

<sup>b</sup> Compilation of seven responses from that jurisdiction.

<sup>c</sup> Compilation of five responses from that jurisdiction.

**Table 7: Jurisdictions Offering Types of Outpatient Services for Individuals With ABI**

Type of inpatient services	Jurisdiction availability			
	AB <sup>a</sup>	BC <sup>a</sup>	ON <sup>b</sup>	SK <sup>c</sup>
Clinical nutrition			X	X
Holistic services			X	
Clinical pharmacy				X
Nursing			X	X
Occupational therapy		X	X	X
Physiotherapy		X	X	X
Physiatry		X		X
Speech-language pathology		X	X	X
Case management	X		X	X
Online services or modules			X	
Recreation therapy	X		X	X
Individualized programming for patients			X	X
Social services			X	X
Spiritual services				
Other: Behaviour consultant and neuropsychiatry			X	

AB = Alberta; ABI = acquired brain injury; BC = British Columbia; ON = Ontario; SK = Saskatchewan.

<sup>a</sup> One respondent represented from this jurisdiction.

<sup>b</sup> Compilation of seven responses from that jurisdiction.

<sup>c</sup> Compilation of five responses from that jurisdiction.

**Table 8: Criteria That Patients Must Meet to Access ABI Services or Programs by Jurisdictions**

Criteria	Jurisdictions			
	AB <sup>a</sup>	BC <sup>a</sup>	ON <sup>b</sup>	SK <sup>c</sup>
Referral from physician or other health care provider	X	X		
Assessment or criteria (e.g., evaluation, checklist)	X	X	X	X
Severity of ABI diagnosis	X	X		X
Time of ABI diagnosis	X	X	X	X
Other: Presence of an ABI diagnosis	X		X	
Other: Demographics (e.g., age, location)			X	
Other: Attempting substance use sobriety				X

AB = Alberta; ABI = acquired brain injury; BC = British Columbia; ON = Ontario; SK = Saskatchewan.

<sup>a</sup> One respondent represented from this jurisdiction.

<sup>b</sup> Compilation of seven responses from this jurisdiction.

<sup>c</sup> Compilation of five responses from this jurisdiction.