

# E-mental health: Promising advancements in policy, research, and practice

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## Abstract

The increasing need for mental health services in the population is posing significant challenges for the health system. It is therefore important to identify new approaches to delivering care that are sustainable and scalable in terms of reach and impact. E-mental health is one approach that shows promise in addressing the treatment gap in mental healthcare. E-mental health involves leveraging the Internet and related technologies such as smartphone apps, web sites, and social media to deliver mental health services. Over the past decade, this field has made significant advancements in Canada and internationally. In this article, the author introduces the e-mental health field and provides an overview of promising Canadian developments in relation to policy, research, and practice. In addition, the article discusses some of the challenges facing the wide-scale implementation of e-mental health and identifies priority areas of focus for health leaders to advance the field.

## Introduction

The use of Information and Communication Technologies (ICTs) is now highly prevalent in Canadian society. Research indicates that the majority of Internet users in Canada spend an average of 3-4 hours on-line per day, and more than half of Canadians have access to multiple devices at home with Internet connectivity (eg, laptop computer, smartphone).<sup>1</sup> These technologies are transforming the way we engage in activities of daily life, including, for example, banking, shopping, communicating with friends and family, and increasingly, for seeking health-related information, services, and support. The latter is well-illustrated by studies conducted among various segments of the Canadian population such as the elderly,<sup>2</sup> youth,<sup>3</sup> mental health service users,<sup>4</sup> and First Nations communities.<sup>5</sup>

For example, a survey of 521 Canadian youth between the ages of 17 and 24 showed that 61.6% used the Internet for accessing mental health information or support and 82.9% reported being somewhat likely or very likely to use an information-based web site if going through a difficult time.<sup>3</sup> Seniors, a population that could stereotypically be perceived as being at the margins of Internet access and use, are also going on-line to seek health information. A study conducted with 33,832 Canadians, split into three age groups (ie, 18-34, 35-64, over 65), found that 58% of seniors with access to the Internet used it to get health information and that this use was not significantly different when compared to the other age groups.<sup>2</sup> Mental health service users, even those diagnosed with serious forms of psychiatric disorders, also go on-line for mental health information. A survey conducted with 67 young adults (ages 18-35) receiving specialized services for first-episode psychosis found that mental health information was among the top five most popular types of information searched for on-line.<sup>4</sup>

The use of the Internet and related technologies to deliver or enhance mental health information and services is referred to as e-mental health.<sup>6</sup> This concept is derived from the broader term

of e-health (ie, use of ICTs in healthcare),<sup>7</sup> sometimes referred to as digital health. A range of other associated terms have either predated or evolved from these concepts, in part due to the evolution of technology and/or the population of interest. For example, gerontechnology refers to the use of technologies to address the well-being of older adults. Telemedicine and telehealth involve using video conferencing technologies to connect patients and providers across geographical distances in real time. The term m-health refers to the use of mobile devices such as smartphones for healthcare, and the term e-mental health brings attention to the use of technology to address mental health issues.

Research and innovation in e-mental health has significantly advanced in Canada particularly over the past decade. These advancements have arrived at an opportune time given that it is estimated that one in five Canadians per year are affected by mental health issues and a significant percentage (33%) of Canadians report that their mental health needs are unmet or only partially met.<sup>8,9</sup> Moreover, by the age of 40, it has been estimated that a staggering 50% of Canadians will have experienced a mental illness.<sup>8</sup> Thus, it is increasingly recognized that the treatment gap is widening to the point of approaching levels of crisis, creating a need for the implementation of transformative solutions. While e-mental health may not completely solve this gap, it has the potential for being able to address some of the barriers that Canadians face in accessing mental healthcare. Yet, despite this potential, the implementation of e-mental health within the public healthcare system is still in its infancy.

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Significant policy-, system-, and organizational-level leadership is required to advance e-mental health practice; however, many health leaders and practitioners may not be sufficiently informed about this emerging field. As such, the objective of this article is three-fold: (1) to introduce the e-mental health field, addressing questions such as: what is e-mental health, how can it address barriers to care, and what are examples of promising developments in Canada?; (2) discuss the concerns and challenges facing implementation of e-mental health; and (3) identify priority areas of focus for health leadership to advance the field.

This is a perspective paper that draws upon a rapid review and updated review on e-mental health,<sup>10,11</sup> an environmental scan of e-mental health initiatives in Canada,<sup>12</sup> additional research and literature from the Canadian and international landscape,<sup>1-9,13-43</sup> and regular monitoring of emerging developments as part of the author's program of research in e-mental health. It is important to note that this is an introductory article to what is still an emerging field of practice in Canada; as such, it is not intended to provide an exhaustive description of initiatives. Rather, the paper offers a wide-angled perspective on promising developments, as well as examples of resources that may be helpful to health leaders and practitioners.

### **E-mental health: Snapshot of the field**

This section provides an overview of how e-mental health innovations can be applied within the healthcare system, for example, at which points in care, for what purposes, with what types of technologies, and with what anticipated strengths and benefits. E-mental health services and interventions can be offered across the continuum of care, including mental health promotion and prevention, primary care, secondary care, specialized/tertiary services, and during transitions between services. A wide range of technologies have been leveraged to develop and test e-mental health solutions across the continuum of care. These e-health solutions can be categorized in terms of their purposes, such as providing information, screening, assessment, monitoring, intervention, and peer support.<sup>10</sup> Interventions can include self-management tools, communication with service providers, counselling, and various forms of psychological and social therapies.

Technologies that have been leveraged for e-mental health services and interventions include, but are not exclusive to, web sites, portals, social media, video conferencing solutions, virtual reality, chatbots, smartphones, apps (ie, software applications developed for mobile devices), and wearable devices with sensors (devices that measure physiological and behavioral data, such as heart rate and sleep patterns). Mobile devices and wearables have been investigated for their feasibility and potential to support mental health treatment and monitoring of symptoms and behaviours,<sup>13-16</sup> such as sleep patterns<sup>13</sup> and physical activity.<sup>14</sup> The increasing wide-spread ownership of mobile phones on a global scale has also prompted attention from the global mental health field on the potential applications of e-mental health in lower and

middle-income countries. This is illustrated, for example, through recent special issues on e-health in journals specializing in global mental health<sup>17</sup> as well as a position statement on e-mental health released by the World Psychiatric Association.<sup>18</sup>

The e-mental health field has proliferated over the past decade in part due to the wide range of benefits and strengths associated with it. A rapid review of the e-mental health literature conducted by Lal and Adair<sup>10</sup> found that the strengths associated with e-mental health initiatives typically pertain to the accessibility of services. In this regard, e-mental health has the potential to increase the reach of services for individuals living in rural and remote locations, but also for those living in urban and semi-urban settings facing various barriers to accessing care, such as transportation, physical disability, or scheduling conflicts.

One of the most notable examples where e-mental health has been used to increase access, is in relation to psychological therapies (eg, motivational interviewing and Cognitive-Behavioural Therapy [CBT]). For example, CBT services are often provided by highly trained individuals, in a 1:1 format, within the context of an office/clinic, with long wait lists. In response, various forms of technology have been leveraged to deliver CBT, otherwise referred to as Internet-delivered CBT (iCBT). Internet-delivered CBT (self-led, therapist-guided, or in combination) has been extensively studied; several reviews of the literature have reported that therapist-assisted iCBT is acceptable to patients and can be as efficacious as in-person CBT, particularly for depression and anxiety.<sup>19-21</sup>

It has also been noted in the literature that e-mental health interventions may have benefits in terms of improving continuity of care and service engagement through interactive media and tailored approaches,<sup>10,22</sup> which is particularly relevant given the high rates of disengagement associated with mental health services.<sup>23</sup> E-mental health interventions may also be pertinent for populations that prefer to seek help anonymously. Other strengths associated with e-mental health innovations include standardization of care and reducing costs over time.<sup>10</sup> The extensive documentation of the strengths and benefits of e-mental health has inspired momentum to advance the field nationally and internationally.

### **Promising advancements in the Canadian e-mental health landscape**

This section provides an overview of promising examples that illustrate the advancement of e-mental health initiatives within the Canadian context, starting with an overview of the policy developments for this field of practice.

#### **Policy**

The 2015 final report from the federal advisory panel on healthcare innovation, led by David Naylor, recommended technological transformation as one of the key priorities for helping to address the challenges faced by the Canadian healthcare system. Aligned with these priorities, the Mental

Health Commission of Canada (MHCC), a not-for-profit organization funded through Health Canada, has taken a catalyst role in promoting knowledge exchange on the topic of e-mental health and preparing the foundation for policy-making in the field. One of the first steps the MHCC undertook was commissioning a rapid review of e-mental health research, which was subsequently developed further and published in the journal *Psychiatric Services*.<sup>10</sup> This review provided the foundation for a landmark briefing document on e-mental health,<sup>24</sup> which called for a paradigm shift in the way mental health services are delivered. Building on this momentum, the Commission then reported on an updated literature review of e-mental health research,<sup>11</sup> an environmental scan of e-mental health initiatives in Canada,<sup>12</sup> and has convened a series of roundtable discussions with health leaders, service providers, and policy-makers. Many of these initiatives have been anchored by the Commission's Mental Health Strategy that was released in 2012, which highlighted the potential of technology for advancing strategic directions in terms of promotion and prevention; recovery and rights; access to services; disparities and diversity; First Nations, Inuit, and Metis; and leadership and collaboration.<sup>25</sup>

There is also preliminary evidence that e-mental health is being considered within provincial policy-making agendas. For example, Quebec's mental health action plan (2015-2020) supports the use of technology for improving access and quality of mental health services for youth.<sup>26</sup> However, focused attention to guidelines and policies specific to e-mental health within provincial mental health strategies and action plans is limited. Concurrently, provincial agencies and professional associations have developed policy documentation and guiding principles pertaining to the broader field of eHealth; for example, the Registered Nurses' Association of Ontario has published a best practice guidelines document for implementing eHealth solutions.<sup>27</sup> Such documents could serve as starting points for reflection in terms of the implementation of technology within the context of mental health services.

### *E-mental health services and initiatives*

There are several e-mental health services that are now well-established in Canada. For example, the Ontario Telemedicine Network (OTN) provides services and supports to deliver telepsychiatry services to more than 100,000 patients annually (<https://otnhub.ca/patient-care/telepsychiatry/>). These services can be used for new referrals, assessments, shared care, and consultation with primary care providers (physicians are able to bill the Ontario Health Insurance Plan (OHIP) for telemedicine services). Ontario Telemedicine Network offers training and support to new adopters as well as existing users.

Another exemplary organization is Kids Help Phone, a not-for-profit community organization providing free, anonymous and confidential, bilingual, 24-hour counselling services for youth through a range of technologies (eg, phone, mobile app, web sites for children and youth; <https://kidshelpphone.ca/>).

There is also an on-line therapy clinic (<https://www.onlinetherapyuser.ca/>), that has been operating out of the University of Regina since 2010, based on an Australian model for therapist-assisted iCBT (<https://mindspot.org.au/>). The therapy unit provides therapist-assisted iCBT interventions addressing depression and anxiety free of charge, training for healthcare professionals, and conducts research on iCBT. The iCBT therapists are employed either by the clinic or by public sector community mental health clinics. Following a screening process, patients deemed eligible for iCBT are provided with secure access to on-line resources that they are invited to review weekly for 8 weeks. Patients are also offered weekly sessions with a therapist via telephone (approximately 20 min) or secure e-mail. Since 2010, the clinic has provided iCBT to over 2,766 patients. For approximately 26% of patients, this was the first time they accessed mental healthcare. Although on-line therapy user was initially funded through research grants, since 2015 it has received sustained funding through the Saskatchewan Ministry of Health.<sup>28</sup>

### *Innovation, research, and funding*

Provincial governments are beginning to partner with national and international agencies to advance e-mental health research and practice in Canada. For example, the Government of Newfoundland and Labrador recently partnered with the MHCC to implement and evaluate a stepped-care model that leverages a range of on-line resources in combination with in-person mental health services.<sup>29</sup> Although there is limited published research on the Stepped 2.0 model to date, preliminary data from Memorial University of Newfoundland indicate improvements in student mental health service capacity while also maintaining high satisfaction ratings.<sup>29,30</sup> The new project will scale up and test the model in 15 community primary healthcare clinics.

The OTN (<https://otn.ca/>) is collaborating with Canada Health Infoway, Big White Wall (United Kingdom), and several hospitals to pilot the implementation of an on-line peer support community (originally developed in the United Kingdom) with 1,000 patients ages 16 and over. This peer support service will be a complement to the mental health services that patients are already receiving and will also be offered to those who are waiting to receive care (eg, waitlists).<sup>31</sup>

There is also evidence for the uptake of iCBT in out-patient hospital settings. For example, in Ontario, the Scarborough and Rouge Hospital's Mental Health Department has adapted face-to-face CBT modules for patients with mild to moderate symptoms of depression and/or anxiety. In this approach, patients complete six modules on their own time and e-mail their homework to a therapist. Therapists check in with patients weekly via e-mail to provide support, and through telephone if needed. A pilot implementation of the service showed its feasibility and promising results in helping to improve access to psychological services; however, further research using controlled research designs is warranted.<sup>19</sup>

In Quebec, researchers from the University of Montreal Hospital Research Center in collaboration with service providers and clinician-researchers at the Douglas Mental Health University Institute are collaborating with the Orygen Center of Excellence in Youth Mental Health (Australia) to pilot the implementation of HoryzonsCa.<sup>32</sup> HoryzonsCa is a web-based social therapy intervention that integrates peer support, clinician and peer moderation, and psychosocial interventions informed by positive psychology, to sustain recovery and prevent relapses in youth with psychosis. This web-based intervention was originally developed and tested in Australia to support transitions between specialized care and primary care for youth with first-episode psychosis.<sup>33</sup>

In terms of funding, several national agencies have made significant contributions toward advancing innovation, research, and implementation of e-mental health in Canada. For example, in 2014, the Canadian Institutes of Health Research launched the eHealth Innovations Partnership Program, which called for collaboration between researchers, clinicians, patients, decision-makers, and health technology companies to develop, implement, and evaluate eHealth innovations to address gaps in care for two priority populations, one of which included youth affected by mental health issues. In the youth category, this program has funded eight e-health initiatives for development and testing in real-world settings, including within universities and healthcare agencies.<sup>34</sup> One of the projects funded through this initiative has partnered with youth to develop and evaluate a web- and mobile-based platform to improve the ability of postsecondary students to access mental health services.<sup>34,35</sup> Another multi-stakeholder team is developing, implementing, and evaluating an on-line self-referral pathway in a mix of Canadian urban, semi-rural, and rural settings to empower youth and members of their support network in accessing mental health teams in their local communities.<sup>34</sup>

The government of Canada has also invested in researchers specializing in e-Mental Health, for example, through the Canada Research Chairs (CRC) Program (<http://www.chairs-chaires.gc.ca/home-accueil-eng.aspx>). These strategic investments are meant to advance academic research and excellence and to train the next generation of researchers in specialized fields. For example, this program has awarded a CRC in Clinical Cyberpsychology at the Université du Québec en Outaouais, to advance research on the effectiveness of virtual reality and video conferencing to treat anxiety disorders, and more recently a CRC in Innovation and Technology for Youth Mental Health Services at the University of Montreal.

## Challenges and concerns regarding e-mental health

Although e-mental health practice is advancing in Canada, its wide-scale routinization at the level of frontline service delivery is far from optimal, with minimal uptake for even the most well-established approaches. For example, telepsychiatry (or telemental health), involving real-time

appointments through videoconferencing, is one of the oldest types of e-mental health services and has been well-researched, with systematic reviews supporting its use. A systematic review of 452 randomized controlled trials (RCTs) showed that telepsychiatry is as reliable as face-to-face for conducting assessments, performs equally well in terms of treatment outcomes, and is more cost-effective.<sup>36</sup> However, despite the existing evidence base, implementation of telepsychiatry in Canada is yet to be integrated widely; moreover, telepsychiatry is typically considered for its utility in rural and remote settings, whereas many individuals living in urban contexts could also benefit from this approach.

Several concerns have been raised about e-mental health that could help to explain its limited wide-scale implementation. These concerns relate to privacy, data security, liability, financial interests of developers, feasibility, and risks associated with using e-mental health with certain types of populations (eg, individuals experiencing severe and persistent mental illness) and concerns that this approach could marginalize individuals already marginalized by the mental healthcare system, such as those with cognitive, physical, or financial limitations.<sup>10</sup>

It is also important to add the issue of evidence to the above-mentioned concerns. It is well-recognized that the pace of technology development in the e-mental health landscape is significantly outpacing the availability of rigorous evidence. This imbalance in terms of what is available in the market and what has been evaluated sufficiently raises the question of whether the existing evidence base on various types of e-mental services is sufficient for decision-making at the health system level. For example, while there continues to be a prolific development of mental health apps, many of these apps have been evaluated for their potential to monitor symptoms rather than deliver interventions,<sup>15</sup> and clinical evidence on apps is limited.<sup>37</sup> Concerns have also been expressed about the low methodological quality of research that compares therapist-supported iCBT with face-to-face CBT.<sup>20</sup> There is also limited availability of effectiveness research on iCBT implemented in a diverse range of healthcare settings to inform implementation; albeit, recent efforts are emerging (eg, in primary care and hospital outpatient departments).<sup>19,38</sup> These observations pertaining to iCBT research also reflect the broader evidence base in e-mental health. A recent review of the literature found that many of the existing studies in e-mental health consist of small sample sizes, limited follow-up durations, and limited information on the social and demographic characteristics of participants.<sup>11</sup>

Another implementation issue is the lack of governance and coordination in terms of the development, implementation, evaluation, and scaling up of e-mental health initiatives. This has contributed to a proliferation and duplication (eg, through hackathons and/or initiatives supported through venture capitalism) of mental health apps, web sites, Internet interventions, and other digital resources, within and across jurisdictions. Moreover, many of these initiatives are siloed from existing services within the public health sector, posing a range of risks for continuity and quality of care. Within this context,

consumers and service providers are increasingly offered a disarray of e-mental health solutions, many of which have similar purposes, posing a real challenge for decision-making.

In addition, resources providing guidance on how to select digital tools for use in real-world settings, for example, through recent development of app libraries in Canada (eg, <https://practicalapps.ca/>), are not necessarily coordinated in terms of their efforts, nor based on any unified assessment approach, nor do they typically consider the perspectives of multiple stakeholder groups. Strategic leadership and coordination in terms of e-mental health policy, research, and practice among healthcare decision-makers and managers (including individuals working in privacy, archives, information technology), industry, researchers, academic institutions, and consumer stakeholder groups is needed to optimize more efficient (eg, better use of funding) and impactful advancements in the field.

A range of theoretical models, and their adaptations, have been used to better understand the innovation-implementation gap among healthcare professionals, such as the widely cited technology acceptance model, which posits that the use of a technology is dependent upon an individual's attitudes toward that technology, specifically in relation to its usefulness and ease of use.<sup>39</sup> For example, a qualitative study investigating clinician perspectives on using technology in youth mental healthcare found that clinicians had beliefs that using technology would limit the quality of face-to-face interactions, encourage dependency on technology, may not be useful for certain populations (eg, individuals with borderline personality disorder or individuals with schizophrenia), and would increase risks for clinicians to manage.<sup>40</sup> These types of clinician perspectives, as well as their comfort and confidence with using new technologies, are important to recognize and address (eg, through training and education) as they can negatively influence the integration of e-mental health within routine practice. In addition to personal factors at the provider and patient level, it is also important to consider organizational factors (eg, culture of innovation, leadership support, and training) and contextual factors (eg, policies, regulations, evidence base).

## Discussion and conclusions

This article has described significant advancements in the Canadian e-mental health landscape; however, it has also highlighted its nascent nature in terms of wide-scale implementation. A clear roadmap to system-wide implementation, with well-articulated milestones and benchmarks to success, are yet to be defined. The implementation of e-mental health services in routine practice implies a paradigm shift in the way services are organized, delivered, and received. As such, the perspectives of a diverse range of stakeholder groups (eg, healthcare providers and leaders, researchers, patient and family representatives, industry, and other sectors of the community), including insights gained through international collaborations, will be important to inform the development of an e-mental health implementation path that is both feasible and impactful for the diverse regions of the country.

Toward building a course of action at the policy, system, and service levels of care, this last section proposes 10 key strategies for moving forward the e-mental health field, informed by the author's synthesis of recommendations made in Canadian research and policy documents<sup>10,11,12,24,41</sup> as well as the author's perspective: (1) including e-mental health strategies within mental health policies and action plans at the national and provincial levels; (2) establishing leadership at multiple levels of the system for implementation and sustainability; (3) optimizing infrastructure and access to technology in institutions and agencies providing mental health services; (4) providing training to clinicians and managers (and education for future healthcare professionals) on e-mental health; (5) implementing evidence-based and promising e-mental health practices; (6) considering population and contextual diversity in the development, implementation, and evaluation of e-mental health initiatives (eg, culture, gender, literacy, local resources, organizational readiness); (7) advancing implementation research (eg, implementing in diverse real-world settings); considering cost efficiencies and effectiveness; focussing on under-served populations; implementing blended and stepped-care approaches in programs of care (eg, offering services in-person and on-line depending on patient need and status); (8) engaging consumers, caregivers, providers, and decision-makers in the development, implementation, and evaluation of e-mental health initiatives; (9) funding at the provincial, national, and international level for implementation research and funding for sustaining, scaling, and continuous improvement of both promising and evidence-based innovations; and (10) engaging in knowledge translation and exchange nationally and internationally on the types of evidence needed to make decisions on e-mental health solutions; lessons learned in terms of implementation; and patient, service provider, and public awareness of e-mental health. In relation to training resources, initial efforts have been made across the country, for example, in the development of e-mental health toolkits and factsheets, such as an e-mental health toolkit developed by the MHCC<sup>42</sup> and an e-mental health guide tailored for a pan-Canadian network working toward transforming mental health services for youth.<sup>43</sup> As more of such toolkits, workshops, and training resources are made available for healthcare leaders and practitioners, it will be important to evaluate the reach and impact of these initiatives.


In conclusion, e-mental health is a rapidly growing field recognized for its potential in addressing the challenges in providing access to mental health services. Over the past decade, Canada has made promising advancements pertaining to e-mental health policy, research, and practice. Moreover, many of these advancements are occurring in different parts of the country and are involving multi-stakeholder, national, and/or international collaborations. The timing, therefore, is optimal for strategic and coordinated leadership within the healthcare system. It is imperative that this leadership emerge across stakeholder groups (eg, health decision-makers, clinical leaders, researchers, patient, and family representatives) for codesigning the advancement of the e-mental health field. Such leadership will help to ensure that Canada does not become a land of

piloted and fragmented e-mental health initiatives within a rapidly evolving technology landscape; and that measurable and meaningful transformations occur at the e-mental health policy, research, and practice levels of the healthcare system to meet the mental health needs of Canadians.

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