

# Our Digital Moment: Innovations and Opportunities in Digital Mental Health Care

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“If we can use apps to order dinner and video chats to stay in touch with family—we can use new technology to keep each other healthy.”<sup>1</sup> So commented Prime Minister Justin Trudeau in May when he announced \$240.5 million “to develop, expand, and launch virtual care and mental health tools to support Canadians,” in response to the COVID-19 pandemic.<sup>2</sup> That week, the Ontario government committed itself to enhancing e-therapy options, particularly for those struggling with the stress of the pandemic, and the British Columbia government promised \$5 million to support virtual mental health care.<sup>3</sup> These commitments follow others made by governments across North America, affecting compensation and regulations and—ultimately—practice. With so much political enthusiasm and pandemic reality, is mental health care having a digital moment?

COVID-19 pandemic has changed health care delivery, including mental health care services around the world. Consider:

- At the Centre for Addiction and Mental Health (CAMH), the largest psychiatric hospital in Canada, virtual care visits increased from approximately 350 per month to almost 3,000, an increase of over 850%, from March to April 2020.<sup>4</sup>
- Kaiser Permanente, the largest managed care organization in the United States with 12 million plan members, now delivers 90% of its psychiatric care virtually.<sup>5</sup>
- In a new *Psychiatric Services* paper, Uscher-Pines et al. surveyed 20 American psychiatrists, finding that all of them changed to fully virtual practices because of the COVID-19 pandemic, though most hadn't used telepsychiatry previously.<sup>6</sup>

- Apps and other forms of online care have grown more popular; for example, Talkspace, which offers text messages and therapy sessions, reports a 65% increase in clients since the pandemic started.<sup>7</sup>
- Even communication apps such as WeChat and WhatsApp have been used to provide counseling.<sup>8</sup>

These changes are in marked contrast to the situation before the pandemic. Telehealth clinical sessions represented just 0.15% of all health care services in 2014 (based on billable services).<sup>9</sup> Focusing on mental health: In a recent study, Serhal et al. reported on the use of telepsychiatry in Ontario;<sup>10</sup> only 7% of psychiatrists delivered telepsychiatry,

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and of the more than 48,000 Ontarians in need of psychiatric care (defined by the authors as psychiatric or primary care within a year after a psychiatric hospitalization), fewer than 1% saw a psychiatrist through telepsychiatry. In the United States, by comparison, just 5% of Medicare psychiatrists provided at least 1 telemedicine visit in 2018.<sup>11</sup>

Digital mental health care takes different forms, from online modules for psychotherapy, such as cognitive behavioral therapy (CBT), to chatbots, which are computer program using artificial intelligence (AI) and natural language processing to determine the intent and engage in conversations with text or text to speech.<sup>12</sup> There are potentially lasting benefits to the digital changes embraced over this pandemic, including increased convenience for patients, enhanced adherence to appointments, and access to care that is unbound by geography, backed by evidence that digital mental health care can be effective. We focus on 3 widely used forms: telepsychiatry, Internet-delivered CBT (iCBT), and apps.

Telepsychiatry has been studied for decades; in comparison to in-person visits, there are no differences in measures of therapeutic alliance and patient satisfaction.<sup>13,14,15</sup> iCBT has been found to be effective for anxiety and depression, with moderate to large effect sizes.<sup>16</sup> Apps are less studied, but can offer evidence-based care, and are increasingly popular; PTSD Coach, as an example, has more than 150,000 downloads.<sup>17</sup>

There are, however, potential drawbacks. There is less evidence to support the use of telepsychiatry for people with severe mental disorders, perhaps because of their lower socioeconomic status and unstable living situations.<sup>18</sup> iCBT has high dropout rates if not guided by (human) therapists.<sup>19</sup> Actual utilization of apps is unclear; looking at the most popular mental health apps with over 100,000 downloads, Baumel et al. found that 96% of users were not engaging with the app after 2 weeks.<sup>20</sup> And digital mental health care may not meet proper standards for patient privacy, confidentiality, and reliability of service delivery.

Digital mental health has been embraced rapidly in the current pandemic largely because there is no safe alternative for providing mental health services. This has been a welcome and much needed adoption because digital mental health has helped to sustain core services, a disruptive but essential development. We strongly believe that digital psychiatry has the potential to transform future mental health care delivery. In this regard, we applaud investments in virtual mental health services by governments and industry but caution that a thoughtful approach is needed to direct those resources to realize its full potential. We make 5 specific recommendations:

### *Continue but Review Compensation and Regulatory Reforms*

Jurisdictions changed regulatory and compensation frameworks to encourage the use of digital mental health options in response to COVID-19. For example, in every province,

physician billing codes have been modified and amended to allow for virtual visits (including telephone visits). In the United States, government agencies relaxed regulatory requirements, including the Health Insurance Portability and Accountability Act (HIPAA) security rules allowing the use of nonsecure platforms that enabled many psychiatrists to offer virtual care options for patients.

Postpandemic, it should be a priority to continue these changes, allowing providers and patients more flexibility in their care options, but to do so in a manner that protects patients' privacy. So, as an example, billing changes that allow compensation for virtual care visits should be maintained, but changes to HIPAA in the United States and relevant Canadian personal health information legislation should be reconsidered in order to protect patient privacy and confidentiality.

### *Ensure Safety and Privacy*

Patient privacy must include digital privacy. Today, that isn't necessarily the case. The Uscher-Pines et al. survey, for example, found psychiatrists used various digital platforms, including nonsecure networks—meaning that people outside of the doctor-patient relationship could virtually “eavesdrop.”<sup>6</sup> (As an example, Zoom, widely used but not designed for patient care, had reported privacy breaches with “Zoom-bombing,” though the underlying issues have been apparently addressed.<sup>21</sup>)

The Prime Minister's announcement included an important first step: funding for secure digital platforms. However, few details have been provided. Governments should work to enable providers with options for secure platforms—and we emphasize that this must be done sooner rather than later for practical reasons, either by developing a unique platform or by working with industry to make one (or more than one) available. Physicians should also discuss with their patients digital privacy, particularly when they are using apps known to sell personal data to third parties.<sup>22</sup> A simple starting point: encouraging patients and their families to see whether digital privacy policies are suitable for them.

### *Personalize Care*

Because of the pandemic, many providers have embraced digital services, leaving patients with a one-size-fits-all approach. Besides burden of illness, patient interest in digital mental health may vary by other factors, including preference and digital literacy. As Shore et al. suggest, basic questions need to be asked: “How much virtual care is too much? Is there a virtual saturation point, at which the benefits of a virtual relationship decrease or patients request more in-person interactions?”<sup>23</sup>

Over time, digital options should become part of a menu offered to patients, guided by evidence and their interest (and resources). Indeed, digital options can be easily incorporated into a stepped model of care, particularly for those with mild

to moderate depression or anxiety disorders, who may start with self-help modules or chatbots; those who do not improve may move to the next “step” to seek therapist-guided digital therapy; nonresponders would receive face-to-face therapy. Digital mental health solutions may also have a role in helping those with severe mental illnesses such as schizophrenia; there is evidence that virtual reality strategies can be used for cognitive and social rehabilitation and improving some symptoms of psychosis.<sup>24</sup>

### Address Inequities

The self-isolation of COVID-19 has resulted in major changes to the delivery of public services like education and health care. But are people being left behind? To address the fact that some elementary and secondary students don't have computers, provincial governments have worked to provide them with iPads and data.<sup>25</sup> Unfortunately, such efforts in mental health care have been lacking, yet tens of millions of North Americans don't have broadband access.<sup>26</sup>

Governments should work with the private and not-for-profit sectors to address 2 gaps.<sup>26</sup> First, there is the technology gap, with some lacking access to basic technology like smart phones and/or the Internet. Hospitals and clinics could offer “digital rooms” where patients can drop by and use computers. Smart phones should be offered to people who can't afford them. Rural areas need consistent and affordable broadband access. Second, there is the knowledge gap, with some not knowing how to use computers. Digital literacy could be addressed with free courses and resources, giving people the opportunity to learn and understand how to use digital mental health care.

### Invest in Research

As Vigo et al. note in this journal: “Most existing tools are still underdeveloped, under-evaluated, with poor user engagement, and do not fully leverage state-of-the-art artificial intelligence (AI) mechanisms.”<sup>27</sup> To reach the potential of digital mental health, further research is needed to better understand who responds to what type of care. Big data may help. In a recent study of text-based iCBT, drawing on 96,000 hours of therapy, certain techniques—such as assigning homework—were associated with better outcomes.<sup>28</sup> But research may also prove challenging, particularly for apps. As Gratzner and Goldbloom argue: “Traditional methods of evaluation in psychiatric research may not be practical for these new technologies; unlike a drug whose patent persists to keep the drug unaltered for years, app updates can improve the product on a weekly basis.”<sup>29</sup> Thus, funding for research is needed, but a robust and scientifically valid evaluation framework for these interventions would also be required and would have implications for a regulatory approach.

Ultimately, we note the tremendous opportunity of AI (which could be defined as “making it possible for machines to learn from experience, adjust to new inputs and perform

human-like tasks”<sup>30</sup>). At present, AI has shown promise in health care;<sup>31</sup> it is utilized by a handful of mental health apps, but its clinical utility is unclear (though user experience has been positive<sup>12</sup>). With meaningful investment, AI could move mental health care delivery to a new level of evidence and personalized care and perhaps even into the realm of prevention. It's possible to imagine a day when, say, a patient has an app that notes changes in his/her day-to-day activities with passive data collection and understanding of his/her usual behavioral patterns (like decreased sleep, fewer text messages, and less variability in geo-locations visited) and then takes action: alerting the treatment team of early warning signs of relapse and offering CBT in real time, preventing a full depressive episode—all with patient consent, of course. These technological advances must be done under the scrutiny of ethics. The potential is great but must combine development, implementation, and knowledge translation, capitalizing on the vigor of industry, and would require significant and ongoing government support.

In conclusion, we believe that there are enough websites, tools, and questionnaires on mental health issues, and any further investments in these areas would not significantly impact mental health care. Instead, we suggest that the investments be directed toward developing more secure and stable platforms that can support delivery of digital mental health care, ensuring patient privacy, and interactive, personalized AI-based apps that are able to monitor behavioral health in real time and offer therapy in order to improve outcomes in real-world settings.

COVID-19 has already changed mental health care. But by following these 5 recommendations, we believe that our current digital moment can become transformative for our patients.







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