Greater adoption of telemedicine could offer economic and social benefits for Canada
The COVID-19 pandemic has rapidly transformed many business sectors, including healthcare. Pre-pandemic, Canada was behind its international peers in its use of telemedicine. Now, many patient consultations, both primary and specialist, are conducted virtually. A key question is whether this increase in teleconsultations and other types of telemedicine will persist in Canada, and to what extent certain policy conditions could, and should, support a more permanent increase in the usage of telemedicine in the future.

RAND Europe researchers examined the potential impact of continued, long-term use of telemedicine in Canada. They found that, alongside the benefits from tools such as telemonitoring and digital health records, widespread use of teleconsultations could lead to significant benefits for Canadian patients, the Canadian economy and wider Canadian society. The findings directly contribute to the evidence base in telemedicine and virtual healthcare more generally.

KEY FINDINGS

• There is evidence in the literature that, for some health settings, such as in the management of chronic conditions, telemedicine can generate comparable and even improved healthcare outcomes for patients.

• Simply by saving work and leisure time, a permanent increase in teleconsultations can generate as much as CAD 5bn a year for the Canadian economy.

• Teleconsultations can improve the health system by leading to fewer missed appointments and lowering the use of emergency departments for minor issues, saving CAD 147m a year if used effectively.

• Teleconsultations could help reach Canadians in communities where medical care is harder to access and improve their well-being, worth up to CAD 611m a year.

• In Canada, there are significant technical, socio-economic and regulatory barriers to a permanent increase in the use of telemedicine and teleconsultations.

• If Canada is going to realise the potential value of telemedicine on a permanent basis, a concerted, long-term effort may be required to address these barriers, such as:

  - implementing a nationally harmonised electronic patient record system
  - improving digital literacy and skills among patients and clinicians
  - modifying physician payment mechanisms to ensure virtual care is compensated on a par with in-person care.

• Closer cooperation among key Canadian stakeholders could help ensure universal access to telemedicine, especially for patients in remote areas who do not have access to physical clinics.
The study’s evidence review showed that in regard to patient outcomes, telemedicine is comparable, or even superior, to standard of care in the management of some chronic diseases, such as diabetes and heart failure.

Telemedicine is also associated with a relatively large acceptability among patients, and leads to high patient satisfaction, especially in ease of access to healthcare services. The reduced need to travel and the potential reduction in waiting time are important convenience factors for patients.

Teleconsultations can lead to a large reduction in travel and waiting times with potentially large productivity improvements and positive effects on economic output. The reduced travel times are also associated with substantial environmental benefits through lower emission outputs as people travel less by cars to get to appointments.

For some people, replacing face-to-face consultations with remote consultations will not be suitable though, and there will remain many health problems that will require an in-person inspection by a health practitioner to maintain a quality of care. Teleconsultations may also be more efficient when conducted within an already established doctor-patient relationship.

What is telemedicine?

Telemonitoring – the use of mobile devices and technical platforms to conduct medical tests and to communicate the results to healthcare professionals in real-time, e.g. ‘smart inhalers’ for asthma patients.

Digital storage and sharing of health records across different healthcare providers.

Real-time teleconsultations between healthcare providers and patients over different technology platforms.

Telemedicine could improve care and benefit the wider economy
The associated economic value of time saved by increasing the use of teleconsultations in Canada is estimated to be worth up to CAD 5bn per year compared with pre-COVID levels

To estimate the economic value associated with the potential time saved from increased telemedicine use, researchers compared a future scenario of increased teleconsultations in primary care settings with a baseline pre-pandemic uptake of 4 per cent. They quantified the value of time saved using a macroeconomic computational general equilibrium model based on the Canadian economy.

The scenario had four different levels of increased uptake – 5 per cent; 10 per cent; 25 per cent; and 50 per cent. The analysis showed that increasing uptake to 50 per cent could lead to total economic benefits of up to CAD 5bn annually for Canada.

A more permanent increase in the use of telemedicine in Canada could be associated with fewer unnecessary emergency care visits and missed appointments worth up to CAD 147m in direct healthcare cost savings per year

Each year a relatively large proportion of Canadians use a hospital emergency department for visits that could appropriately be treated through a regular primary care provider (e.g. GP or family doctor). Care provided in emergency care for the same condition tends to be more expensive than care provided in primary care settings. Furthermore, every year a relatively large number of appointments with clinicians are missed. Evidence suggests that the option of teleconsultations could lead to fewer missed appointments and unnecessary emergency care visits.

The researchers calculated the direct healthcare cost savings that could result from fewer emergency department visits and missed appointments if teleconsultations could be offered to patients. For example, if 50 per cent of unnecessary emergency department visits or missed appointments could be averted through offering teleconsultations to Canadians, the Canadian healthcare system would save up to CAD 89m and CAD 58m respectively as a result.
Providing access to a primary care provider is associated with positive well-being effects worth up to CAD 611m per year

At least 3 per cent of Canadians report that they have unmet health needs, of which unavailability of services in the area, long waiting times and distance and transportation are cited among the main factors influencing the perceived lack of care. Telemedicine could overcome geographic barriers and be particularly beneficial for patients in communities where clinician shortages exist, and in rural geographical locations. Furthermore, telemedicine can make it easier and more convenient for patients to engage with their healthcare providers, leading to more flexible and real-time care. Most Canadians are in favour of virtual healthcare visits, and about 40 per cent of Canadians say they would be willing to switch to virtual clinician visits for most of their health needs.

The researchers applied an emerging valuation method that calculates the well-being effects of things or events that do not have a direct market value, such as feelings or states of health. The approach is commonly referred to as the ‘life satisfaction’ or ‘well-being valuation’ approach and measures the monetary value that a person would have to be compensated with to have the same level of life satisfaction in the absence of a significant factor, such as not having a primary care provider available.

The researchers estimate that if 50 per cent of the population without current access to a local primary care provider could be provided access through teleconsultations, the aggregated well-being value across Canada would be CAD 611m per year.
Existing barriers hinder the adoption of telemedicine in Canada and elsewhere

Telemedicine has seen a significant increase in use since the beginning of the COVID-19 pandemic, mainly because it rapidly became a central means of providing healthcare to patients while employing measures such as lockdowns to contain the virus. However, many barriers could hinder wider uptake of telemedicine. This is despite the temporary lifting of some regulations by governments to allow for its broader use. Some of the barriers identified are universal, while others are specific to Canada.

**Technical barriers**
The existing Canadian infrastructure that would be required for telemedicine applications, such as access to fixed and wireless broadband, is relatively well developed and suits most current telemedicine applications. However, there is a lack of integration, standardisation and interoperability of the technical infrastructure related to telemedicine across different regional jurisdictions. For instance, instead of a harmonised and standardised patient health record, there exists separate systems.

The shift to telemedicine could also be hindered by a lack of user-friendly solutions and lack of support for users. In addition, a lack of adequate skills and training among healthcare staff could adversely impact the development and use of telemedicine applications.

**Socio-economic barriers**
Those patients who most stand to benefit from telemedicine are often those who are least likely to be able to access and use it. For instance, for low-income individuals or households, the cost of buying suitable equipment to engage in telemedicine could be prohibitive. Other factors such as age, ethnicity, culture, language or religion can also have an impact on people’s willingness to use telemedicine services, particularly if these aspects have not been considered during the development stage of the system.

There is also the challenge of a lack of digital health literacy among certain populations in Canada. Individuals with lower levels of digital literacy tend to come disproportionately from population groups with lower socio-economic status or education, ethnic minorities and older adults, putting them at greatest risk of exclusion from technological advancements.

**Regulatory barriers**
The organisation and regulation of health services and professionals fall mainly under provincial jurisdiction in Canada. As such, healthcare professionals may need to go through various regulatory authorities to understand the applicable rules and, in some cases, to obtain permits or authorisation to practise in other provinces. Relatedly, interoperability standards are necessary so that practitioners (and patients) can have seamless access to electronic health record data wherever they are in the country.

Furthermore, there is a lack of clear reimbursement mechanisms for telemedicine procedures, both regarding the payment model used and the provincial implications deriving from it. Before the COVID-19 pandemic, payment systems predominantly encouraged face-to-face consultations.

Finally, there are potential issues with the privacy of personal health information for patients, providers and insurance companies, which could adversely affect patients’ and clinicians’ level of trust and willingness to adopt and use telemedicine systems.
What could be done to improve access to telemedicine?

1) **Ensure technical interoperability of electronic health records.** To increase the interoperability of health information, experts have called for the establishment of a nationally harmonised electronic patient record system in Canada. The European Commission has adopted a Recommendation on a pan-European electronic health record exchange format to unlock the flow of health data across borders and ease the interoperability of electronic health records across borders.

2) **Develop user-friendly solutions through the private and public sectors** and provide relevant education and training to healthcare staff. The development of simple tools and platforms accessible to all should be considered. This applies to both those who supply the service (practitioners) and those who use it (patients).

3) **Provide healthcare staff with the skills and training necessary to develop telemedicine.** An early introduction to telemedicine, such as that provided in undergraduate and postgraduate medical education curricula in the United States or Germany, can equip medical trainees with core competencies in digital patient care, clinical knowledge and practice-based learning, to prepare for increasing use of telemedicine applications.
4) Continue to address existing health inequities and improve digital health literacy. To keep up with advancements in technology, the digital divide across different population groups needs to be addressed. There is also a need to remove financial barriers for lower-income households by, for example, implementing co-payments for teleconsultations or waivers to purchase equipment needed, such as smartphones (as well as data plans or internet access).

5) Develop a provincial or local strategy to address jurisdictional barriers. A national strategy should be complemented by a provincial telemedicine strategy to address jurisdictional barriers to simplify the registration and licensing processes for qualified physicians to provide virtual care across local boundaries.

6) Modify the existing fee system to ensure physicians are reimbursed for using telemedicine methods. Modifying the existing fee code system to ensure that the delivery of all telemedicine services is eligible for compensation could incentivise the uptake of telemedicine for physicians.

7) Develop national standards for patient health information access. Further development of national standards for patient health information access is crucial for effective care coordination among different healthcare stakeholders. Ensuring that electronic data follow patients across healthcare providers would address a key barrier to effective care coordination.