

Telemedicine takes centre stage during COVID-19 pandemic

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ABSTRACT

The COVID-19 pandemic continues to spread rapidly and overwhelm health systems around the world. To cope with this unprecedented usage of healthcare resources, increasingly novel solutions are being brought into the fray. Telemedicine has been thrust into the spotlight in the fight against COVID-19 and is being employed in many different ways to better tackle the challenges. Telemedicine will likely have a more permanent place in traditional healthcare delivery long after COVID-19 is over as users and providers recognise its utility.

As COVID-19 pandemic spreads swiftly, international health organisations, governments and hospitals are grappling to contain the spread. Necessity is the mother of all innovation, and during this crisis, efforts have been directed to identify creative solutions to tackle unique problems arising from the pandemic. Telemedicine has taken centre stage and appears to provide solutions to some of these problems.

Telemedicine refers to the provision of remote clinical services, via real-time two-way communication between the patient and the healthcare provider, using electronic, audio and visual means. Telemedicine is not a new development, already more than 50 large US health systems including Cleveland Clinic and Permanente have already integrated telemedicine into their care delivery model before COVID-19 outbreak.¹ However, telemedicine has been a small segment of overall care provision and has not gained universal traction. According to a survey in USA, less 10% have used telehealth services and nearly three-quarters did not have access or awareness of it.² Telemedicine has been thrust into the forefront during the COVID-19 outbreak. This bittersweet moment for telemedicine might be the tipping point, with continued

acceptance long after this crisis is over, to establish itself within the framework of mainstream healthcare delivery.

Many healthcare providers in USA, such as Spectrum Health and McLeod Health, started offering free telemedicine screening for COVID-19 since early March 2020. After an initial virtual consult, patients are referred for further evaluation if deemed necessary. Screening or triaging appears to be a good fit for telemedicine. It lowers the barriers to screening and facilitates access to care to those who need it. It is much easier for one to be screened in the comfort of their own home instead of travelling to the nearest emergency department that maybe miles away, making the highest impact in countries with significant rural populations or limited testing centres. In addition, it helps to prioritise precious resources by triaging low-risk patients in their own home and reserving the capacity in hospital for high-risk patients. If a high-risk patient is flagged during the virtual consult, hospitals can use their own ambulances and staff already in personal protective equipment to fetch these patients from their homes instead of them using public transport further limiting spread in the community. Utilising smart algorithms with input from patients and providing basic information such as demographics, travel history and contact history can help further risk-stratify patients, reducing the physician cognitive load and time. These algorithms can be modified on the fly in response to the frequent incoming updates from national and international health agencies about new cases, location, travel advisories, and so on. Video calls can be used to ensure checks on compliance to quarantine orders at home and are used alongside home visits by officers in Singapore for residents served the Stay-Home Notice.



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Crowded emergency departments and hospitals may be fertile grounds for transmission of infection; limiting non-essential exposure of patients to healthcare systems during a pandemic is an important strategy to reduce the spread of infection. Telemedicine also plays a crucial role in enabling continuity of routine care for patients in this period where non-essential visits to doctors and hospitals should be discouraged. Some outpatient clinic visits such as routine follow-up for chronic diseases such as diabetes, hypertension and other follow-up visits can be conducted virtually, making it safer for those in the community. While telemedicine appears beneficial for the community and patients, it is also favourable from the provider's point of view. Limiting contact with patients who can otherwise be managed virtually helps to reduce risk of transmission. Also, this removes the physical requirement for the doctor to be at a specific place and hence may allow for better management of resources especially in the context of a large healthcare system spread over a large geographical area. Patients placed in a virtual queue system can see a doctor who is available virtually even if the doctor happens to be in another city. Alibaba, for example, has launched a platform providing teleconsultation for all Chinese living overseas; linking them with volunteer doctors who at the initial stages of pandemic were at the front line treating patients in Wuhan, China.³ In Alexandra Hospital, Singapore, telepresence robots are being deployed in isolation wards where it can deliver medication and meals as well as allow communication with doctors and nurses without the need for them to don full personal protective equipment and risk exposure to infection.

It is not unfathomable that healthcare resources in many countries maybe overwhelmed as the COVID-19 pandemic worsens. There may simply not be enough hospital beds to house all patients who test positive for the virus. Instead, the patients who are well, with mild symptoms, may be managed at their own home in isolation with doctors checking in via video calls providing advice and recalling them to hospital only if symptoms worsen or if they require more acute care.

While there has been a sharp uptick in the usage of telemedicine during the COVID-19 pandemic, there remains concerns, limitations and barriers. Reimbursement and payment structures in various countries do not provide favourable conditions for telemedicine consults. Many projects and trials conducted on telemedicine using subsidies and grants failed the moment these subsidies ended or grants dried off.⁴ This is however changing. Since early 2018, the French government has made provisions for refunds for 70% of teleconsultation services and up to 100% for chronic conditions recognising the huge burden these diseases have on the healthcare system. Today, France has more than 10 telemedicine platforms servicing the patients proving that telemedicine can be a commercially viable proposition

beyond COVID-19. Medicare, the national insurance programme in America, has geographical restrictions on telemedicine, which has bearing on the commercial viability of any telemedicine intervention. However, this has recently been waived as part of the government's response to the public health crisis via emergency spending bill with some of these regulations being relaxed. In Singapore, telemedicine start-up Doctor Anywhere raised US\$27million in a Series B round to facilitate regional expansion.⁵ Such substantial investment amidst tough economic conditions bears proof of the importance of telemedicine in the fight against COVID-19 and its future beyond.

A favourable regulatory environment is key to support healthcare transformation in telemedicine. While reimbursements and payment structures supported by the government form one aspect of this, the national and regional medical licensing authorities must work together to provide guidelines that support innovation without compromising patient safety and care. Singapore, one of the countries to be affected early in the COVID-19 pandemic, had started a regulatory sandbox in 2018 to partner with industry in the early stages to allow for more effective, efficient and appropriate ways to support innovation in telemedicine. In February 2020, recognising the increasing usage of telemedicine consults during this period, the Singapore Medical Association through their telemedicine workgroup has published guidance on leveraging telemedicine during an infectious disease outbreak and a quick-start guide for health providers who are unfamiliar to ride on a system that is already up and running through 10 telemedicine providers in the island state.⁶ Countries who have not embraced telemedicine and with no licensing, payment and regulatory framework for telemedicine will find themselves disadvantaged during this outbreak as these systems take substantial time and resources for implementation.

On the provider side, substantial investments need to be made in software, hardware and training of personnel in use of telemedicine. Many hospital systems have developed their in-house software that sits comfortably alongside their electronic health medical records system, but these need time for development, testing and implementation. Off-the-rack systems can be deployed rapidly and may offer a temporary solution to get through this crisis. Access to fast, stable internet connectivity with secured end-to-end encryption will improve the user experience and allay privacy concerns.

Telemedicine could have reached a tipping point during this COVID-19 pandemic; seeing a spike in its usage, it may gather momentum that sustains even when the crisis is over. This will be supported by improvements and access to personal mobile technology, the proliferation of 4G and 5G networks, digitally savvy population and a changing regulatory and reimbursement structures.

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