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**Medical, legal and ethical issues arising from the use of  
telemedicine in the primary care setting in Singapore**

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## **INTRODUCTION**

Telemedicine refers to the provision of healthcare remotely via information and communications technology (ICT) and encompasses tele-consultation, tele-collaboration, tele-monitoring and tele-support.<sup>(1)</sup>

Prior to the COVID-19 outbreak, telemedicine had already been offered in primary care medical centres such as Polyclinics in the form of nurse-based Telecare services for selected patients for follow up of stable chronic conditions. The pandemic accelerated the use of telemedicine as many healthcare facilities faced problems with ensuring adequate provision of care while maintaining safe distancing measures. There were also increasing requests from patients to avoid physical visits to healthcare establishments for their medical problems due to concerns over COVID-19 or poor mobility. In addition, healthcare resources were being diverted to face the growing COVID-19 outbreak. Hence, patients with stable chronic conditions were advised to defer their appointments or utilise telemedicine services if needed.

In April 2020, the government introduced a time-limited extension for patients to follow up their chronic conditions via video-consultation and use their CHAS subsidy and MediSave to offset the cost.<sup>(2)</sup> Initiatives to expand the range of subsidized pre-approved teleconsultation solutions to increase accessibility of healthcare providers to facilitate teleconsultation in their practices were also introduced.<sup>(3)</sup>

## **ISSUES AND CONCERNS**

As with all new services, telemedicine is not without its teething issues, which will be discussed below.

## **Limitations to the doctor-patient encounter**

### ***Lack of physical examination***

Telemedicine has its own limitations compared to an in-person consultation due to the lack of physical examination. Synchronous video consultation overcomes some of these by allowing doctors to assess important visual cues and to inspect specific body areas as compared to text or phone consultation. Tele-monitoring devices also complements the care by ensuring timely clinical management and care coordination.

### ***Reliability of visual detection of signs***

Although the visual feed is important, the image quality may differ depending on the application used, the quality of the webcam or the stability of the internet. This may adversely impact the accuracy of confirming a diagnosis or the patient's identity.

## **Technical issues**

### ***Internet***

For synchronous video consultation, a reliable internet connection is crucial as a slow Internet speed may result in poor audio-visual quality or a loss in connection, thus compromising care.

### ***Cybersecurity***

Telemedicine involves the processing, handling and transmission of sensitive health information, which may carry potential privacy and cybersecurity risks. The SingHealth IT system cyber-attack in 2018 is a good example of the importance of ensuring robust cybersecurity measures are in place.<sup>(4)</sup> Healthcare providers should identify these potential risks, ensure confidentiality of the patient's health information and ensure that they comply with the relevant regulations pertaining to cybersecurity.<sup>(5)</sup> Adoption of extensive IT security

controls are also important to ensure that all data is securely encrypted. The drawback of this is the high cost and lack of resources of maintaining a comprehensive IT team and enhanced cybersecurity measures for smaller practices in the primary care.

Currently, teleconsultations are performed across various platforms including the use of video-conferencing software like ZOOM which may pose a security concern. Inevitably, some teleconsultation involves sharing of sensitive healthcare information and it is not known if these software stores their data for a prolonged period of time on their server which may be subjected to attacks by hackers.

In line with the above, telemedicine providers should also ensure that there will be proper Identity and Access Management (IAM)<sup>(6)</sup> mechanisms in place to prevent unauthorised access to the telemedicine application, patient's records and to prevent any impersonation of identity. Deepfakes produced by artificial intelligence that yield realistic fabricated images and videos may pose a problem.<sup>(7)</sup> Doctors may have difficulty verifying patient's identity or it may even be exploited by patients with ill intents to manipulate the teleconsultation process.

## **Ethical issues**

### ***Patient safety***

During teleconsultation, it is vital to ensure the patient's safety is not compromised. To ensure the ability to escalate and activate emergency care for the patient, doctors are required to confirm the patient's location and contact number at the start of the session. It is also important to be vigilant of red flags during the consult which may trigger the need for either an urgent medical attention, an in-person consult or a referral.

***Privacy and confidentiality***

It is essential for doctors to be well-versed in the requirements to protect personal data of the patient under the Personal Data Protection Act (PDPA) and its accompanying regulations and guidelines.<sup>(8)</sup> Care should also be taken to ensure the consultation is being done in a private setting to prevent situations of other parties listening into the consultation.

***Recording of encounter***

Although the guidelines states that doctors should not record the contents of the teleconsultation to respect the sanctity of doctor-patient's confidentiality, there is nothing stopping the patients from recording the consult session. A strong doctor-patient relationship based on trust and rapport will help reduce this possibility.

**Legal issues and negligence**

Currently, the Private Hospitals and Medical Clinics Act (PHMCA) regulates the activities of healthcare providers in Singapore,<sup>(9)</sup> but it does not have specific provisions pertaining to telemedicine per se in Singapore. The National Telemedicine Guidelines (NTG)<sup>(1)</sup> and Singapore Medical Council Ethical Code and Ethical Guidelines (SMC ECEG)<sup>(10)</sup> also appear to have some application to Telemedicine but they are limited in scope. This will change once the Healthcare Service Act<sup>(11)</sup> (HCSA) comes into force in 2022. The Act stipulates that all medical practitioners seeking to offer teleconsultation are required to obtain a licence. HCSA shifts the regulatory regime for healthcare services from the current “premise-based” to a “service-based” form of licensing. HCSA allows licensees the flexibility to provide a range of services, and take on new licences in a modular fashion.

MOH also collaborated with prominent telemedicine service providers to launch the Licensing Experimentation and Adaptation Programme (LEAP)<sup>(12)</sup> regulatory sandbox in 2018.

This initiative is to better understand the emerging landscape of telemedicine and its risk to co-create corresponding mitigations.

In view of limitations to telemedicine, there are concerns about a doctor falling short of the standard of care required, thereby being at risk of negligence or breaching the duty of care. Therefore, it is important for doctors to provide sufficient information about the medical service rendered via telemedicine including what to expect from the service, and the limitations and risks involved prior to the start of the consult to ensure informed consent is obtained.

### *Liability arising from misdiagnosis*

In Singapore, there has been no precedent case law regarding telemedicine malpractice and negligence. Additionally, prior to the HCSA taking effect, the regulatory landscape is comprised of disparate laws and guidelines, including the SMC ECEG and the NTG, which have limited scope in their application to telemedicine. For example, the SMC ECEG and the NTG do not clearly provide a list of medical conditions that is to be excluded by telemedicine and the process is left entirely to the doctor's discretion.

In any event, the common law of the tort of negligence will continue to apply to telemedicine with regards to diagnosis, advice and treatment by a doctor. In respect of diagnosis and treatment, the Bolam-Bolitho test still applies. In this test, simply put, the doctor will be deemed not negligent if the act complained of is supported by other respected doctors as long as their opinion is consistent and logical. In respect of medical advice, the modified Montgomery test will apply.<sup>(13)</sup> However, once Section 37 of the Civil Law Act comes into force, it will replace the current modified Montgomery test relating to medical advice.<sup>(14)</sup>

In teleconsultation, concerns about negligence will most likely arise with making the correct diagnosis. As compared to in-person consultation where a diagnosis is made following history and physical examination, misdiagnosis may occur in telemedicine due to the absence

of physical examination. This risk may be even higher with applications such as MaNaDr which provides a platform for text consultations without the need for visual feed.<sup>(15)</sup>

However, it remains yet to be seen what will be the standard of care that doctors will be pegged to in diagnosing a patient in the context of telemedicine. Further considerations will also need to be had on whether telemedicine providers should be liable for services rendered by their locum doctors – as they may well be seen as an independent contractor to the telemedicine provider. It would be prudent to ensure that there is sufficient insurance coverage to ensure that all such risks are covered or mitigated.

## **Professionalism and regulatory issues**

### ***Training and continuing professional development***

Telemedicine in Singapore can only be provided by Singapore Medical Council registered doctors. Doctors are also encouraged to complete the MOH telemedicine E-training module before offering telemedicine services.<sup>(16)</sup> They should similarly maintain the same quality and standard of care as an in-person consult. This can be done by ensuring that they have adequate information and training to manage patients via telemedicine safely. With the cessation of in-person continuous medical education, doctors should continue their professional development remotely via webinars and tele-conferencing to remain updated with best practices in clinical management.

## **Discussion and recommendations**

### ***Cases that are unsuitable for telemedicine***

Based on the MOH Telemedicine E-training module, telemedicine is not suitable for emergency situations or to communicate a new diagnosis of a chronic disease. This is to allow doctors to manage patient's reaction to the information and communicate plans for long term

management of the disease. Telemedicine is also not suitable for patients with new psychiatric conditions or for very young patients due to limitations of clinical history-taking without physical examinations. It is best suited for conditions for which the doctor is reasonably confident that an in-person consult is unlikely to yield any crucial information that may change the management plan for the patient.

### *Developments in telemedicine*

Various Primary Tech-Enhanced Care (PTEC)<sup>(17,18)</sup> initiatives between MOH Office for Healthcare Transformation (MOHT) and polyclinics are ongoing. For example, the hypertension tele-health pilot whereby patients are provided a blood pressure monitoring device that automatically transmits their readings to the polyclinic with further tele-consultation advice and management provided. There are also plans to further roll out PTEC pilots for diabetes management.

Tele-wound Care are also being offered which allows the monitoring of patients wound and for follow up post-nebulisation and insulin titration remotely.<sup>(19)</sup>

Some possible initiatives would include Tele-health programs that allows tuberculosis patients to be provided with their anti-tuberculosis drugs and monitored for consumption remotely. Other initiatives include partnering the community stakeholders to improve senior's accessibility to teleconsultations services for their chronic medical condition.

In some polyclinics, Tele-dermatology and Tele-ECG programmes exist allowing tele-collaboration between family physicians and specialists in tertiary care centres. Following the transmission of images of dermatological lesions and electrocardiogram via a secure portal from the polyclinic, specialists can review and provide their clinical input remotely, thus freeing up capacity for patients with more complex issues requiring in-person consultation at the specialist clinics.<sup>(20)</sup> This can be further expanded to practices across Singapore.



Application of telemedicine within the emergency department setting has also been useful in reducing the time spent in screening patients with respiratory symptoms and in conserving personal protective equipment during COVID-19.<sup>(21)</sup> This can be adopted for practice in primary care where space and manpower may be limited. It will also be useful to tap on the ability to forward-triage patients before their arrival to the emergency department via tele-collaboration between the primary care and emergency care physician.<sup>(22)</sup>

Tele-rounding can also be explored to allow members of multidisciplinary health care team to engage in synchronous discussion about a patient's care remotely. This will be helpful in the care of patients with complex medical problems requiring multidisciplinary input and care management.<sup>(23)</sup> This can be further supported with conducting a family conference via tele-conferencing with family members to discuss patient management.

Development of devices to replicate a doctor's physical examination, such as an electronic stethoscope which can wirelessly transmit sounds to the PC via Bluetooth, will help provide accurate information to the doctor remotely. Some of these technologies already exist but cost issues prohibit their widespread use in telemedicine. Perhaps once the economies of scale in production make the production of these equipment commercially-viable then Telemedicine can unleash its true potential.

### ***Changes in regulation***

The HCSA will not have extra-territorial jurisdiction.<sup>(24)</sup> The provision of healthcare services from within Singapore to patients overseas for travel or work will also be outside the jurisdiction of HCSA. This may pose a problem for doctors whose patients wish to be seen via teleconsultation, while overseas, for example, due to the rapport between their usual practitioner or having more trust in the local healthcare system, and are then not afforded the same comparable protection as if they were within Singapore. There may thus be a need for

the HCSA to provide such comparable safeguards for these patients overseas. This should be undertaken only after extensive research into the risk, benefits and legal implications of such provision of extra-territorial services.

## **CONCLUSION**

Telemedicine has shown promising results and demand for the service will likely keep rising. Once the HCSA comes into force, medical practitioners will have a clearer framework and guidelines to work with. As discussed above, the teething issues currently encountered in telemedicine are likely to be resolved with technological improvements and better guidelines.

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