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Beyond the Pandemic: TELEHEALTH

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Telehealth or telemedicine in Singapore existed in many forms long before January 2015 when the Ministry of Health (MOH) released the first National Telemedicine Guidelines. This first set of guidelines identified four domains; namely, telecollaboration (between professionals or institutions), tele-treatment (consultation and/or medication), tele-monitoring (remote monitoring of clinical parameters), and tele-support (education and assisted navigation).1 These domains laid the foundation for the structured implementation of telemedicine services, ensuring that both healthcare providers and patients could navigate the use of emerging digital healthcare platforms safely and effectively.

In modern pre-COVID-19 Singapore, the overall uptake of telemedicine had been slow. Many patients, if not most, had relatively easy access to a healthcare facility - whether primary or specialist care, inpatient or outpatient, public or private. This accessibility of care, coupled with cultural preferences for in-person consultations, limited the perceived need for remote care solutions. Out of the four domains, tele-treatment had the least traction due to face-to-face consultations being the preferred norm for the majority,² with clinicians often emphasising the importance of physical examinations as part of patient assessment.

Unsurprisingly, things changed drastically with the onset of the COVID-19 pandemic. Pandemic restrictions aside, patients themselves turned to telehealth for fear of coming into contact with COVID-19 patients while seeking treatment in healthcare facilities. The industry quickly pivoted to the provision of telemedicine for acute care, chronic disease management, mental health support and home medicine delivery services to meet the demand.³ This rapid shift demonstrated the feasibility and acceptance of remote consultations by both patients and healthcare providers. It also resulted in waves of innovation, resulting in new platforms, technologies and services for telemedicine, leading to improvements in user experience and functionality.

The rise of telemedicine in the post-COVID-19 era

As we continue to move into the post-COVID-19 era, a large number of patients transitioned back to in-person consultations with their regular doctors particularly those with complex chronic conditions requiring medications.² For such patients, face-to-face consultations remain essential to enable physical examinations, laboratory investigations and the reinforcement of long-term treatment adherence. However, some of those with minor, acute conditions and who were on work-from-home arrangements continued to opt for the convenience of short telehealth consultations and medication delivery, which helped them avoid long wait times in clinics.

Specialties that had pivoted to teleservices during the pandemic soon realised that they could reduce the frequency of follow-up visits for their long-term patients by adopting a hybrid approach to follow-up care.³ This hybrid model allows for a combination of telemedicine and in-person visits, enabling better continuity of care without compromising clinical outcomes.

While this phenomenon is mainly so for the tele-treatment arm of telemedicine, opportunities to grow for tele-collaboration, tele-monitoring and tele-support remain strong. In telecollaboration, communication between healthcare providers – including but not limited to specialists, primary care physicians, nursing homes and outpatient care services - runs silently in the background to support patient care coordination.4 Tele-monitoring, particularly for chronic disease management, continues to advance with new platforms that link homebased medical devices to healthcare professionals, enabling early detection of complications and timely intervention.

Tele-support services, such as call centres integrated with artificial intelligence (AI) tools, facilitate administrative tasks like appointment scheduling, specialist referrals and prescription refills, further streamlining patient care access and reducing administrative workloads.

The potential of tele-collaboration

Tele-collaboration is an area of particular interest for Singapore. In October 2023, National University Hospital surgeons performed a robotic gastrectomy in Nagoya, Japan – all from a surgeon cockpit in Singapore.⁵ Long-distance robotic tele-surgery using high-speed fibre-optic communication to safely perform challenging surgical procedures is just one of the examples of recent innovations advancing the possibilities of tele-collaboration.

Globally, tele-collaboration is being widely employed to bring specialist-level services to rural health posts. While Singapore does not face this particular challenge, tele-collaboration presents the opportunity to establish Singapore as the leading regional hub and centre for medical excellence within ASEAN for cross-border collaboration.

Locally, some examples of telecollaboration include cross-institution remote tumour boards, remote dermatology blue letter services (eg, the National Skin Centre and National Healthcare Group Polyclinics' Tele-DERM service) and even provision of specialist reviews to bedbound patients at home or in longterm care facilities, such as nursing homes.

Despite the potential for advancement, there still remains a level of apprehension among both healthcare providers and patients regarding this shift in the healthcare landscape. Improving our understanding and trust in these new technologies as a society is a key step in enabling us to further push the boundaries of tele-collaboration.

Challenges: moving forward

Building a robust, scalable telemedicine infrastructure requires significant investment in technology, cybersecurity and clinician training. Public institutions must balance funding allocations between telemedicine and existing healthcare services, while private providers may pass high development costs onto patients, limiting accessibility for lowerincome groups. Insurance coverage for teleconsultations remains inconsistent, posing further financial barriers to patients.

Another challenge is the rapid rollout of telehealth services without thorough testing, regulation and integration into existing healthcare workflows. This challenge was initially amplified due to the urgency of the pandemic situation. Without careful planning, hospitals, clinics and digital health platforms may come to develop incompatible systems, reducing interoperability and compromising care coordination. It is also important not to allow telemedicine to create unsustainable workloads for clinicians on the grounds of increased efficiency, adding to clinician burnout.

Despite Singapore's high rate of technological penetration, many elderly patients struggle with health literacy and digital tools. A significant number of elderly patients are not aware of how to access their Singpass or HealthHub SG apps, relying largely on their family or caregivers to do so. Language barriers, particularly among non-English-speaking seniors, further widen the digital divide.

Undoubtedly, Singapore has already seen rising incidents of misuse of telemedicine, including fraudulent issuance of medical certificates, prescriptions and unregulated treatments. Such risks undermine patient safety and erode public trust in digital healthcare. Strict regulatory frameworks must be enforced to ensure only licensed healthcare providers can offer teleconsultations, and that all interactions adhere to MOH guidelines. Data security laws such as the Personal Data Protection Act must be strictly applied, and Al-driven fraud detection systems could help identify suspicious activity in real time.

Conclusion

Telemedicine has the potential to transform healthcare delivery, offering increased access, improved convenience and enhanced efficiency. However, realising this potential requires addressing the challenges related to the digital divide, quality of care, data privacy and integration with existing systems. By taking a balanced approach and prioritising patient needs, there is the opportunity to harness the power of telemedicine to improve public health and well-being in the post-COVID-19 era. The future of healthcare will likely involve a hybrid model, combining the strengths of both telemedicine and traditional in-person care.

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