

Editorial

Inspired by COVID-19: primary care of chronic diseases must also innovate

Primary care providers (PCPs) play a crucial role in the COVID-19 pandemic, as any patient consulting a PCP for respiratory symptoms and febrile illness may be a suspected case (1). However, there is the need to ensure care continuity of the many patients with chronic medical conditions who will still require consultations and medications, while ensuring social distancing and minimizing crowding in primary care facilities. PCPs will therefore need to adapt in light of the constraints imposed through the current pandemic.

To minimize physical face-to-face consultations, PCPs can learn from how other industries have adapted during this period. For example, the Ministry of Education in Singapore has adopted full home-based digital learning to maintain a semblance of curriculum delivery despite stringent social distancing measures (2). Likewise, food and beverage entities have had to rapidly adopt pick-up and point delivery services (3).

Enabling technologies: wearable devices and teleconsulting

Apart from tele-video conferencing with the PCPs, which is now widely accepted as a norm during this period, remote telemonitoring of chronic diseases has gained traction over the past decade and is already in use for patients with certain conditions such as cardiac arrhythmia (4,5). Such systems allow for both patient- and device-triggered events and data uploads to a monitoring system accessible by an authorized nurse or PCP, enabling prompt actions from the health care provider (5).

Wearable health devices that can provide monitoring of physical activity levels, blood pressure and electrocardiogram data are already on the market (6). Non-invasive continuous glucose monitoring is a newer development, and studies have begun to cautiously demonstrate the utility of such devices (7).

These devices can sync real-time data to the PCP's telemonitoring system, permitting increased objectivity of biodata along with the ability for the PCP to quickly examine time-based data trends for each patient as required. Alongside audio or video teleconsulting, this will allow PCPs to provide more personalized chronic care and continue facilitating patient-provider decision-making, while eliminating the need for higher risk patients to visit the clinic during public health emergencies.

It would not be far-fetched to imagine the utility of a 'smart' telemonitoring system that could sync real-time biodata with case and family history of the patient, allowing the system to assist the PCP in tailoring a modular chronic care programme for each patient

based on their risk stratification. Coupled with a national or regional database, like the National Electronic Health Records system present in Singapore, a holistic approach incorporating primary to tertiary care can be ensured.

Enabling technologies: smart pillboxes, home phlebotomy, drone delivery and cost-recovery

Innovations have also permitted remote care delivery in recent years. Smart pillboxes have been shown to be effective in reducing non-adherence to prescription regimens for older chronic patients, and are often paired with smartphone or tablet applications that permit PCPs to upload personalized prescriptions to each pillbox (8).

With home phlebotomy requests submitted from the PCP, patients with cardiovascular or respiratory comorbidities can continue to receive their regular blood tests in a low risk setting (9). In the context of this pandemic, risk to the patient can be mitigated even more by ensuring that phlebotomists and nurses providing this service are not part of medical teams that care for COVID-19 patients.

Drone delivery of supplies in disaster-relief efforts has also increasingly been explored for adapted use in various medical settings (10). While legal frameworks and acceptability barriers are yet to be overcome, a possible implementation of the technology could see PCPs electronically dispatching prescriptions to a pharmacy, which would then pack and deliver the relevant medications to the patient's home address or a more accessible community collection point such as a post office via an aerial drone.

Similarly, secure electronic systems now allow patients to conduct health-related transactions through the appropriate banking applications on their mobile phone, averting the need to utilize a clinic-based cashier service.

Limitations to consider

While this commentary has discussed the various ways in which telehealth can assist PCPs with care continuity while reducing risk to patients during infectious disease outbreaks and other public health crises, several key limitations to implementation must be considered. Firstly, although telehealth can increase care accessibility for high risk patients and the homebound, primary care systems should be careful not to alienate individuals for whom technology acceptance may be a problem. These include patients from lower economic strata or those with low educational or health literacy (11). For PCPs, those in smaller—or solo—practices are also likely

to face challenges such as poorer economies of scale in new technology adoption and in processing large amounts of real-time electronic patient data. These barriers to adoption could be exacerbated by technical considerations such as the accuracy of telehealth wearable devices, concerns about patient monitoring in scenarios where telecommunications network coverage is disrupted, or simply poor patient adherence to the prescribed use of such devices. Moreover, the verdict on overall cost-effectiveness of telehealth in chronic care settings remains inconclusive; it also remains to be seen how, and on whom, costs will be borne within primary care systems (12). Lastly, acceptability from patients is undetermined. The elderly generation may feel a physical consultation to be more a social than a medical visit. Likewise, many may not feel that the current tele-video conferencing with a doctor warrants a fee, as they may feel the new model of care would suit the physicians more and may therefore feel short-changed. Most importantly, the impact of telemedicine on the patient-provider relationship must be evaluated, as remote communication tools can create a literal 'barrier' to the therapeutic relationship between PCP and patient.

Implications for the future of primary care

Nonetheless, 'smart' systems enabled by artificial intelligence that permit personalized, tailored, remotely delivered care hold potential in pushing the boundaries of primary care even beyond the context of infection risk mitigation within the current COVID-19 pandemic. It is well known that the vast majority of health care expenditures and utilization is clustered among a small (5–10%) percentage of the most vulnerable strata of the patient population (13). Telehealth may allow PCPs to prioritize face-to-face resources for more effective management of these individuals' chronic care needs, without compromising the quality of care for the rest of their patients.

Moving forward, a better understanding of telehealth acceptance is needed in the context of patient sociodemographic factors (e.g. age, digital literacy, type of chronic illness), and in terms of emerging concerns such as patient privacy and confidentiality of biodata. Comparative studies are also required to examine PCPs' perspectives as well as patients' clinical outcomes and quality of life between standard care and telehealth initiatives. Lastly, prospective research should evaluate the long-term cost-effectiveness of adopting such systems, compared to the primary care clinical practices that telehealth seeks to supplement or even substitute.

In the words of former Director-General of the World Health Organization, Dr Margaret Chan, 'family doctors are the cornerstone for both prevention and care' (14). Now is as good a time as any for the primary care community to evolve systems that are effective, personalized and yet resilient to health crises that threaten to disrupt the continuity of care.

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