Telemedicine — maintaining quality during times of transition

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The COVID-19 crisis has accelerated the adoption of telemedicine, presenting challenges and opportunities for clinicians trying to manage diverse, and not only pandemic-related, health conditions. Here, we consider some limitations of telemedicine and offer a perspective on how clinicians can adapt to working in different health-care delivery systems.

Originally prioritized to service remote or underserved areas, the potential for employing telehealth (the use of digital technologies to deliver medical care, health education and public health) for emergencies and disasters has been previously described[1]. To decrease transmission of SARS-CoV-2, the virus responsible for COVID-19, while maintaining health-care access, telehealth — particularly, virtual visits in place of traditional in-person visits — has expanded rapidly around the world. Although some providers are enthusiastic with this development[2], in our opinion, the rapid adoption of telehealth provisions should not come at the cost of comfort and safety of patients or the quality of the care provided.

Telemedicine specifically addresses the diagnosis, treatment and monitoring of patients (including history taking and appropriate physical examination) by means of electronic technology. Patient encounters aim to provide care as safely and effectively as traditional in-person visits through live, synchronous video conferencing. Telemedicine offers additional electronic exchange of health information including the collection, transmission and interpretation of patient data ('store and forward'), the extraction of health data from wearable devices (increasingly worn by patients) and quick exchanges of digital information via patient portals, tablets and cell phones (allowing for updates and reminders).

From the patient perspective, telemedicine may offer convenience and lower cost, relegating in-person visits to a later option for addressing their needs[3]. Patients can access up-to-date technology using automated logic flows (bots) when seeking referral to nurse triage lines and to schedule video visits. Although telehealth offers solutions for basic access to health care in the midst of the current pandemic, it is not yet uniformly integrated into regular health-care systems and, as a 'disruptive process', it necessitates major adaptations to existing frameworks[4]. In the midst of these major changes, clinicians are still responsible for ensuring patients receive the care they need, as well as understand the limitations of telemedicine visits.

We contest that telemedicine limits the powers of observation that guide diagnosis and treatment. For example, a common clinical challenge is the evaluation of persistent, non-specific symptoms such as pain. We (S.R.-S.) were able to diagnose 'heartburn' (which had occurred without any back pain) as the sole presentation of spinal osteomyelitis through gentle percussion of the spine — a diagnostic manoeuver not possible through a computer screen. The computer screen can also miss, for example, subtle but revealing changes such as early clubbing in fingers, early capillary changes in the nailfolds, wheezing and crepitations (crackles) and limit the ability to perform 6-minute walk testing to determine needs of supplemental oxygen and gait disturbances, amongst others. Additionally, for some patients, the screen presents a physical barrier, hindering an atmosphere of trust between the patient and doctor. This challenge is particularly important for physicians to overcome when caring for those with complex health problems, in whom abnormalities may occur overtly or occultly.

Reassuringly, telemedicine can provide remote peripheral examination devices that can enhance video conferencing as well as store and forward. Depending on clinical needs, budget and storage space, the equivalent 'net neutrality' (to assure a stable, secure internet connectivity) and the willingness for provider and patient, such tools can include video otoscopes, electronic stethoscopes, dermatoscopes, retinal imaging system and intraoral scopes. However, the lack of uniform or widespread use of such devices, and the need for individual clinics to endorse specific uses, could hinder adoption[5].

Even if conditions, provisions and training are all available, each clinic must classify specific medical needs for telemedicine use to ensure patient needs are appropriately met. Several excellent resources address integration of telehealth into existing health-care delivery systems[6,7]. Alongside these resources, we feel that there is a need to consider both the art and science of medical decision-making. Starting with straightforward and common problems, such as simple rashes and hypertension, we suggest that these might be safely evaluated

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https://doi.org/10.1038/s41572-020-0185-x

by a virtual visit. Certain factors such as fever or back pain could remove suspected urinary tract infections from this category; should a dipstick or culture be necessary but unavailable at the patient's location, arrangements for testing, according to clinic protocol, would need to be arranged.

Many conditions, including diabetes, osteoarthritis, substance abuse, depression and attention deficit/hyperactivity disorder, require monitoring that could be achieved using telemedicine, provided that the patient has been stable based on prior documentation and individual clinic protocol. Similarly, patients on specific treatment protocols — who need to be followed up for potential adverse effects of treatment, compliance, progress or deviations from expected courses — can safely benefit from telemedicine visits. When frequent monitoring of high-risk immunosuppressive therapy is required — as in solid organ recipients or certain patients with arthritis — 'standing orders' for laboratory testing can be smoothly integrated into telemedicine services. However, we feel strongly that complex medical problems involving major decision-making, such as in follow-up of organ transplant recipients who are manifesting symptoms suggestive of infection or rejection, require in-person patient evaluation. Health-care providers should be prepared to interrupt digital visits or arrange timely follow-up as necessary, so that any patient identified as requiring in-person evaluation will be appropriately directed to receive timely medical attention.

We also feel that new patients or existing patients with new health problems are best evaluated by in-person visits. In general, history taking for such patients is more comprehensive than for focused follow-up visits. There may be elements in the medical history or even in the family history that can influence the differential diagnosis or management. Additionally, as in-person exchanges can establish the bond of trust and teamwork between patient and provider, we feel very strongly that at least the first visit should be a direct physician–patient interaction. The bond-forming element inherent in the traditional doctor–patient relationship is based on human awareness of both personal space and the healing effects generated from touch and direct face-to-face interactions. The loss of three-dimensional space by virtue of looking into a computer screen interferes with cues on a subconscious level[8]. For example, in-person visit enabled us (G.R.) to diagnose polymyositis in a patient who overtly presented with signs of interstitial pneumonia of otherwise unknown cause; only through in-person interaction supported by the patient's spouse was sufficient detail forthcoming and ultimately saved the patient an unnecessary lung biopsy[9].

Ideally, acute illness requires in-person evaluation by a qualified health-care provider owing to a potential sense of urgency. Telemedicine has been shown to be successful in an acute medical situation when the history and physical examination can be performed on the patient 'locally' and the subsequent findings are electronically conveyed to a remote consultant[10]. Any patient experiencing progressive symptoms, for example, involving pain, dyspnoea, diarrhoea or neurological symptoms, whether such progression results from increased intensity, distribution or new onset, also requires an in-person (and quite possibly urgent) evaluation. Even conditions that are usually in the low-risk category can escalate or be an 'innocuous' manifestation of a more serious disease. Thus, we must caution against unrestricted use of artificial intelligence technologies, especially when triaging patients as they seek appointments.

The COVID-19 crisis has presented multiple barriers to health care, including patients' fears of acquiring infection through travel to health-care facilities, imposed quarantines and self-isolation, and providers' fears of acquiring infection. Through the sense of urgency and crisis, the growing adoption of telemedicine presents a compromise to traditional bedside or face-to-face delivery of care. Clinics and hospitals have the obligation to communicate to patients that all possible means are being taken to prevent transmission of infection while maintaining quality in the delivery of care. Ultimately, the advantage of convenience from conducting a telemedicine visit has to be balanced and weighed against the benefits of direct human interactions. Given that the ramifications of the COVID-19 pandemic will be felt for some time, we encourage care providers to offer guidelines or best working practices on managing new patients in the era of telemedicine.

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Competing interests
The authors declare no competing interests.

Peer review information
Nature Reviews Disease Primers thanks M. Mars, A. Smith and the other, anonymous, reviewer(s) for their contribution to the peer review of this work.