



title **Moving towards value-based, patient-centred telehealth to support cancer care**

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key
messages

- There is a need for a new model of telehealth service for cancer that aligns with clinical needs of patients', providers' expectations, and funding arrangements. The telehealth model should utilise value-based care principles and accurately measure clinical and patient reported outcomes.
- Measures to provide effective information technology infrastructure for telehealth, together with technical/administrative support and policies/regulations regarding data privacy and security, need to be implemented.
- Patients', caregivers' and providers' satisfaction with telehealth should be routinely assessed. These outcomes should be collected longitudinally and data used to drive better health care, improve telehealth, and support the development of policy changes and funding models.
- Ongoing research and demonstration initiatives will be required to monitor the benefits and detriments of value-based, patient-centred telehealth models for cancer and to nourish the wider implementation of telehealth.

introduction

The COVID-19 pandemic has dominated all sectors of Australian life – testing state and national policies, brought healthcare to the top of national priorities, and led to quick adoption of strategies and practices to protect vulnerable populations. At the outset of the pandemic, telehealth was widely embraced by policy makers, healthcare providers and patients to facilitate consultations, patient monitoring, communication and continuity of care, and minimise the risk of infection.

In the provision of cancer care, numerous changes have been recommended and implemented to variable degrees. These include modification of treatment pathways (change in therapy, delay, or omission), postponement of clinical trials, and delay in timely diagnosis, including suspension of screening programs. These changes were implemented to protect patients with malignancies, who are considered to be a higher risk group for developing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, with resultant poorer outcomes than the general population. Emerging data show that the diagnostic and treatment delays resulting from the suspension or reduction in health services will lead to substantial increase in the number of avoidable cancer deaths. Effective use of telehealth can reduce these adverse outcomes and close gaps in patient access to care.

Moving forward, the combination of the need for innovative strategies within the more stringent economic conditions we face, means improving value in healthcare has become paramount. It is, therefore, important to learn from our experiences within this global crisis and ensure that valuable lessons are implemented in future policy, particularly to guide the delivery of patient-centred, value-based healthcare.

This perspective brief will explore the role of telehealth as a lever to enhance value in the changing value-oriented healthcare landscape. Here we explore the need for an improved telehealth service model for cancer that integrates clinical and patient reported outcomes to support patients' needs and providers' expectations.

telehealth

Telehealth and telemedicine are often incorrectly transposed. The International Organisation for Standardisation defines telehealth as the 'use of telecommunication techniques for the purpose of providing telemedicine, medical education, and health education over a distance' while telemedicine, is defined as the 'use of advanced telecommunication technologies to exchange health information and provide health-care services across geographic, time, social and cultural barriers'(Australian Government Department of Health, 2020). For simplicity, in this paper, telehealth refers to a methodology for electronic collection and/or exchange of information between health professionals and patients.

Telehealth positives

Telehealth has transformed the way patients can receive health care. It offers convenient, safe, time- and cost -effective service delivery to patients at home or in healthcare facilities in rural and remote areas. Telehealth is ideally placed to support health providers and patients in Australia, particularly in the management of chronic disease and for those in remote locations. Team based care, collaboration, patient access and quality of care, and application of best practices can be enhanced through the use of telehealth platforms. Furthermore, telehealth can improve timeliness of care and patient outcomes and can empower changes in clinical practice that result in better quality of care.

Telehealth negatives

Telehealth poses some technical and practical problems for both healthcare providers and users. Access to equipment and internet is one of the two key technical issues; stable internet connection at time of high demand, particularly in remote areas, and availability of technical support and training is the other (Wong and Cross, 2020). Some of the main clinical concerns are that telehealth is not suitable for visits requiring clinical examinations, immediate investigations, interventions or procedures. Telehealth, in particular phone only rather than video consultation, is also not ideally suited to complex consultations where bad news is being delivered. This is especially significant if the patient is not known to the health professional, or if large numbers of people are involved (such as family members), or if cultural and language issues exist. It can be particularly relevant to people diagnosed with cancer or those with a cognitive impairment or altered mental state. Another disadvantage is that the clinician can lose non-verbal cues which can lead to miscommunication with potentially adverse clinical consequences.

Telehealth in Australia

Until recently, telehealth in Australia focussed on specialist consultation to patients in rural and remote locations with concentration on selected medical specialties – those least compromised by the limitations associated with telehealth consultations. For example, telehealth is commonly used for follow-up outpatient appointments for rural cancer patients, post completion of treatment, with a specialist medical practitioner in a tertiary public hospital. Although telehealth offers clear benefits to the geographically diverse Australian population and could overcome challenges of availability, distance and access, it was only offered by 61% of healthcare professionals, participating in the Future Health Index 2019 survey (Philips, 2019). This survey revealed that, in Australia, telehealth remained an often-untapped tool for healthcare professionals. Despite these findings, nearly half of Australian healthcare professionals believed that their patients' experience had been positively impacted by telehealth in the last 5 years, and 36% of Australians were open to remote consultations for non-urgent care. Reimbursement, cost and technical issues were identified as major barriers to adoption of telehealth. Additionally, 46% of Australians were concerned over data privacy and security and 33% were concerned about lack of regulations around access to medical information.

telehealth during COVID-19

Healthcare systems around the world have been tested by the COVID-19 pandemic which has driven rapid advancement in the use of medical consultations online. As a result, the number of health professionals and individuals using telehealth platforms across the globe has proliferated. Prior to the pandemic, bulk billed telehealth services in Australia were only available to select groups of people and rural and remote populations. In response to COVID-19, the Australian government introduced new temporary bulk billed telehealth services in March 2020 to help reduce the risk of community transmission and provide protection for patients and healthcare providers.

A survey undertaken in March and April 2020 through Australia's Health Panel (Consumers Health Forum of Australia, 2020) about telehealth use suggests that Australians (98% of 95 participants) were aware of telehealth as an option for their healthcare and were generally willing to use telehealth services, but only one third (34%, n=32) had been offered this as an option by healthcare providers. The two most common types of healthcare service consumers were offered via telehealth were for general practice (59%, n=17) and medical specialist consultations (28%, n=8). Results also indicated that participants had concerns about the adequacy of technological infrastructure and healthcare professional skills to ensure that telehealth services are delivered appropriately and effectively (Consumers Health Forum of Australia, 2020).

Additionally, research commissioned by the Australian Digital Health Agency showed a marked increase in community awareness of telehealth since the end of March, 2020 (Australian Digital Health Agency, 2020).

A HealthEngine report identified that telehealth bookings accounted for 15% of overall GP appointments between April and June 2020 (HealthEngine, 2020). A survey of patients who had completed a telehealth appointment booked through HealthEngine between 18 December 2019 and 30 April 2020 showed that 95% of telehealth consultations were via telephone and 5% were via video. The majority (97%) of respondents found the overall telehealth process easy to understand with video consultations preferred by 15% (HealthEngine, 2020).

Further research commissioned by the Australian Digital Health Agency showed that 90% of specialists were open to using more technology when caring for their patients (Australian Digital Health Agency, 2020). Similarly, in a survey completed by over 1,180 Australian GPs, 99% of those surveyed reported that their practices are offering patient consultation via telehealth (including phone and video options) (Royal Australian College of General Practitioners, 2020).

Recently released figures from the Medicine in Australia Balancing Employment and Life study, based on a survey of 2,250 GPs, demonstrated that 70% of GPs working in affluent suburbs have lost income during the COVID-19 pandemic, compared to 50% of GPs in the most disadvantaged areas (Scholefield, 2020). This was attributed to the fall in patient visits and the bulk-billing of Medicare-funded phone and video consultations. These new data suggest that telehealth bulk billing requirements may have a negative impact on private billing practices and raise concern about acceptability of telehealth among some healthcare providers.

The full impact of the widely implemented telehealth service in Australia on healthcare delivery, quality, cost, and patients' and providers' experiences and satisfaction is yet to be realised. However, the experience could provide insight about the potential benefits and challenges and could map a pathway for the future of telehealth and how it may add value to health care.

telehealth and value- based health care

Telehealth has particular relevance to value-based health care. Through provision of access to care for more people in need, telehealth can relieve pressure on the overstretched health system, therefore increasing clinical efficiency, while reducing costs, improve patient satisfaction and promote better outcomes. The use of telehealth can enable more patients to receive high level specialist care and has the capacity to reduce workload for health professionals. Studies have demonstrated that telehealth results in net savings in remote oncology services (mainly due to avoidance of travel costs) (Thaker et al., 2013), is cost-effective in remote orthopaedic consultations from both a societal and health sector perspective (Buvik et al., 2019),

improves survival for patients with chronic heart failure, and is cost effective (Grustam et al., 2018). The use of telehealth has also been associated with improved clinical outcomes for patients with congestive heart failure specifically mortality, hospitalisation and length of stay (Kotb et al., 2015; Zhu et al., 2020).

Telehealth may also play a role in the establishment of new service delivery and payment models. The notion of value-based health care is to deliver outcomes important to patients (both clinical and patient reported outcomes (PROs)) at an affordable cost, encouraging more coordinated and efficient care. A systematic review mapping the evidence base for the effect of telehealth on patient outcomes found that whilst most studies included more than a single outcome, none purposefully examined the impact of telehealth on all domains identified as important by the authors or the measures used in the new funding models (Totten AM, 2016). The review identified a niche for research into telehealth delivery under models of value-based care. For example, the processes of service delivery and managing cancer could potentially be enhanced by some of the beneficial aspects of telehealth and routine measuring of PROs could be key to the successful implementation of telehealth in cancer care. To expedite the successful implementation of telehealth in cancer care, further research is needed which focuses not only on clinical outcomes, but also on PROs, patient's, carer's and health providers' satisfaction, and on cost benefits from the perspectives of both patients and health management.

telehealth in ongoing care

Video consultations can be a substitute for some patient outpatient visits. Published research showed benefits in terms of increased access and satisfaction for patients (Westra and Niessen, 2015), particularly those with complex needs and chronic conditions; enhanced patient and clinician satisfaction with video consultations; and potential time and cost savings.

Patients and healthcare providers see video consultations as an acceptable alternative to face-to-face appointments. A recent systematic review revealed that patients welcomed the offer of virtual urology clinics and felt it was safe, thorough and professional. Importantly, virtual clinics dramatically cut patient-incurred costs, most significantly travel expense (Edison et al., 2020). This review showed that virtual urology clinics offer clinical and financial benefits, however, patient satisfaction was inconsistently reported in the studies (Edison et al., 2020). Clearly, however, video consultations are not suitable if interventions are required in the clinic such as cystoscopy.

Telehealth has been recognised as a tool that can assist in diagnosis, treatment planning, preoperative and postoperative follow-up, administration of chemotherapy, provision of palliative care, and surveillance for patients with gynaecologic cancers (Shalowitz and Moore, 2020) and as a powerful and possibly preferential tool for the

future of outpatient neuro-oncologic care (Daggubati et al., 2020). During the COVID-19 pandemic, telehealth has been successfully used to provide timely care and follow up for patients undergoing radiation treatment in the USA (Lewis et al., 2020) and in the provision of cancer care to patients with genitourinary cancers in Germany (Rodler et al., 2020b).

The German example noted the way in which the uro-oncology outpatient unit in a tertiary care hospital implemented changes in treatment regimen and broad application of telehealth services for their patients with advanced genitourinary cancers to manage patients virtually, wherever possible. Hospital visits could be limited to therapy application only with treatment protocols amended to balance the risk of COVID-19 and the benefit of treatment. A network of secondary care oncologists, radiologists, and primary care physicians based outside the tertiary hospital was established with the uro-oncology team overseeing patient monitoring and treatment decisions. Patients with complex chemotherapies were referred to secondary care oncologists or urologists in order to provide less exposure to other patients. While clinicians learnt that virtual management and reductions in frequency of visits can be feasible (Rodler et al., 2020b), patient feedback indicated that 62.6% of the 92 participants preferred to maintain in-person appointments as opposed to complete remote care, but accepted remote care during the pandemic (Rodler et al., 2020a). Beyond the crisis, maintaining telehealth had low preference rates, with high acceptance for external laboratory tests (60.9%) and online visit management (48.9%), but lower acceptance for remote treatment planning including staging discussions (44.6%) and referral to oncologists (17.4%)(Rodler et al., 2020a).

telehealth and patient outcomes

An evidence map of systematic reviews that assessed the impact of telehealth on clinical outcomes was produced by the Agency for Health Research and Quality (Totten AM, 2016). It revealed that telehealth interventions produce positive outcomes when used for remote patient monitoring, for several chronic conditions, and for psychotherapy as part of behavioural health (Totten AM, 2016). The most consistently reported benefit was seen in the use of telehealth for communication and counselling or remote monitoring of chronic conditions such as cardiovascular and respiratory disease, with improvements in outcomes such as mortality, quality of life, and reductions in hospital admissions (Totten AM, 2016). To the best of our knowledge the impact of telehealth on clinical outcomes of cancer patients has not been assessed.

A further systematic review examining outcomes of health services delivered by telehealth to Indigenous Australians found that telehealth resulted in improved social and emotional wellbeing, clinical outcomes and access to specialist services, plus it reduced travel and improved screening rates for Indigenous Australians (Caffery et al., 2017). The use of telehealth for Indigenous healthcare also addressed poor accessibility to health services and enhanced targeted screening. The review, however, was based on studies with variable methodological quality that lacked research rigour due to predominance of descriptive studies and small sample sizes.

The implication of telehealth for cancer patients is yet to be seen. Early publications resulting from the wide adoption of telehealth in the delivery of restructured cancer services during the COVID-19 pandemic indicate that key concern for patients is their cancer disease and that they value personal interactions with their treating clinicians (Rodler et al., 2020a). Another opportunity deserving attention is the role of telehealth in cancer screening and how telehealth can be adopted by the population screening programs to drive improvement in outcomes.

telehealth and patient satisfaction

A literature review of patients' and caregivers' satisfaction with videoconferencing for people living in rural and remote areas who attended outpatient appointments for a health condition via video consultation found a high level of satisfaction across different domains of system experience (Orlando et al., 2019). These included: audio-visual quality of videoconferencing, accessibility of a service in local healthcare centre, time and cost savings for patients, patient comfort in participating in telehealth, technical support and operations, useability of telehealth technology and satisfaction with information sharing. The study found that while face-to-face appointments were preferred, telehealth remained a satisfactory option due to a reduction in travel and costs. Although the literature reviewed was unclear about why face-to-face appointments were preferred in rural settings the authors hypothesised that an older demographic, the perceived need to develop rapport with the healthcare provider, and unfamiliarity with telehealth were factors potentially influencing patient choices. The review showed that consumer focus was a critical aspect of how well a service was delivered irrespective of information and communication technologies and emphasised that current evidence lacks clarity in terms of how satisfaction is defined and measured (Orlando et al., 2019).

A systematic review and narrative analysis also found that telehealth can improve outcomes, increase communication with providers, increase access to care, increase self-awareness and can empower patients to better manage their chronic conditions (Kruse et al., 2017). The study also revealed that telehealth is a good modality for education, decreases missed appointments, reduces waiting times and readmissions, and improves medication adherence (Kruse et al., 2017).

This dichotomy of acceptance for telehealth but preference for face-to-face consultations was also seen in a patient experience survey with 97 Western Australian cancer patients about the impact of COVID-19 on their care (personal communication). The survey showed that 80% of those in their first year of treatment believed that telehealth lessened their concerns about attending hospitals or clinics. Conversely, results also indicated that telehealth met the needs of 46% of participants and 60% acknowledged that they preferred to attend appointments in person (publication in preparation).

Telehealth offers an alternative mode of service delivery that could be integrated and routinely used in established services and could offer patients choice if perceived as clinically acceptable, safe and appropriate by both care providers and consumers. To achieve overall satisfaction, telehealth services need to align with clinical needs of patients and with providers' expectations. The key challenge is how to accurately measure patients', caregivers' and providers' satisfaction with telehealth and to collect and report these outcomes over time. The Victorian COVID-19 Cancer Taskforce advocates for the establishment of evidence-based, patient-centred telehealth in cancer management and recognises the need for research into the experience of the patients and clinicians to ensure quality of telehealth services (Wong and Cross, 2020).

**patient
reported
outcome
and
telehealth**

PRO instruments measure perceptions of functional status and wellbeing from the patient's perspective. Through use of standardised, validated instruments (Retzer, 2018) information on physical symptoms, treatment toxicities, psychosocial problems, or global health-related quality of life can be captured. PROs are used in many areas of health to identify issues both for the individual patient over time and as a comparator between patients with similar clinical needs. Routine collection of PROs using electronic patient portals or applications available for smartphones could be key to the wide adoption of telehealth and may prove to be the missing link to highlight problems that might not be apparent during non-face-to-face discussions between patients and healthcare providers.

The routine collection of PROs in all clinical settings can improve discussions of patient outcomes/issues, facilitate better communication between patients and healthcare providers, improve symptom control, and increase supportive care responses, patient satisfaction, and wellbeing. The routine use of PROs in symptom monitoring during treatment is associated with increased survival when compared to usual care (Retzer, 2018). Regular collection of PROs data may help clinicians to facilitate patient-centred care, and can shift focus to patients' concerns and needs, resulting in better symptom control.

In telehealth service delivery, the routine collection and use of PROs is particularly relevant because this can improve the consultation by prompting discussion of issues that clinicians may not identify or ask about and patients may not feel are relevant to raise. For this to be achieved it is important to ensure that real time generation and reporting of PRO data is available to support use of PROs in routine practice. To the best of our knowledge there is no literature relevant to the role of PROs in telehealth. Use of electronic PROs in 'real-world' multi-site oncology practices, however, has been shown to be acceptable to patients for communicating symptoms (76%) and to clinicians for treatment planning (80%) (Howell et al., 2020). This also has the potential to reduce patient anxiety and healthcare utilisation and improve patient experience (Howell et al., 2020). Electronic symptom monitoring in patients with metastatic lung cancer, using web-based PRO questionnaire platform, revealed high useability and acceptability. Furthermore, symptom monitoring via web-based PROs following treatment for lung cancer was associated with increased overall survival compared with standard care, most likely due to early detection of adverse events and recurrence (Basch et al., 2017; Denis et al., 2019). These findings support the wider implementation of PROs collection in standard clinical practice and their potential role in routine application of telehealth.

future directions

Telehealth has emerged as an essential service for the timely and cost-effective delivery of health care during the COVID-19 pandemic. It remains to be established what health conditions and populations can benefit most from telehealth. In the field of cancer, the key issues to be addressed are timeliness of use, telehealth accessibility, and acceptability for patients and providers.

Telehealth can be used in different ways for patients at different stages of their disease continuum from diagnosis, through treatment and survivorship, to end of life care. It is paramount, however, to appropriately select patients for telehealth services. This should be based on their preferences, technical skills, access to technology and family or community support with the technology. Face-to-face appointments may be preferred by both patients and providers at diagnosis, during treatment planning and while on active treatment, when emotive issues are being discussed and the patient and clinician are getting to know each other. Telehealth, however, could be offered to support patients' and carers' psychosocial needs at these times.

Routine electronic capture of PROs prior to a telehealth consultation can support service delivery during active treatment, enhancing the utility of telehealth as an alternative to face-to-face services. If PROs were collected prior to each 'visit' they could be utilised during patient consultations for patient-centred, shared decision making.

Furthermore, these could be used to develop patient specific treatment plans in multidisciplinary team discussions and for survivorship and palliative care treatment planning. For effective capture of PROs, a data analytics and reporting system would need to be established to facilitate easy identification of clinical/psychosocial issues during the telehealth visit, and technical support for patients and providers would need to be available. This telehealth model would also need to be acceptable and offer benefits to patients and health providers, the health system and the health payers (governments and private health funds) and be supported by appropriate policies. Additionally, suitable reimbursement models for telehealth would need to be offered, together with implementation of relevant infrastructure and security. Combined, these will provide the building blocks for effective data-driven decision making and quality improvement initiatives.

conclusion

The COVID-19 pandemic changed the landscape of our healthcare system, tested political and ethical boundaries, and necessitated quick implementation of policies and practices that in ordinary times would have been unimaginable or would have taken many years to implement. The significant uptake of telehealth across primary and secondary care for people with different health conditions, and all age groups is such an example. How we learn from this knowledge and use this experience to drive a better, more efficient, safer and affordable healthcare system in the post COVID-19 era will be determined by healthcare providers and users, policy makers and insurers. Current transformation towards value-based health care, combined with the growing demand for more affordable and accessible health services and rapid technological advancement, provide an excellent environment for initiatives to assess the benefits and detriments of telehealth and to encourage the development of policy changes that will facilitate its wide implementation.

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