

Telerehabilitation is here to stay

Telerehabilitation for stroke is here to stay. But at what cost?

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Abstract

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The use of telerehabilitation after stroke has necessarily increased in the last two years because of the Covid-19 pandemic and many rehabilitation teams rapidly adapted to offering their services remotely. Evidence supporting the efficacy of telerehabilitation is still scarce with few randomized controlled trials, although current systematic reviews suggest that telerehabilitation does not lead to inferior outcomes when compared to face-to-face treatment. Increasing experience of telerehabilitation however has highlighted some of the pitfalls that need to be solved before we see widespread pragmatic adoption of new practices. We must ensure that offering services using digital technologies does not exclude those who need our services. We must acknowledge that our interactions online differ, both in the way we relate to each other and in the content of clinical consultations. Furthermore, we need to consider how to support staff who may be feeling disconnected and fatigued after spending hours providing remote therapies. Telerehabilitation is likely here to stay and has potential to help deliver rehabilitation to the many people who could benefit, but there are obstacles, challenges and trade-offs to be considered and overcome.

The COVID-19 global pandemic has necessitated a rapid increase in the uptake of telehealth.¹ The desire to keep health services running combined with increased familiarity with videoconferencing for a range of activities in working and personal lives has meant that the increased use of telehealth has been broadly accepted.

In the field of stroke, telerehabilitation refers to the delivery of rehabilitation consultations, assessments and therapies remotely using information and communication technologies.² Occasionally, and usually only in research studies, telerehabilitation is supplemented with sensors, wearable devices and gaming approaches.³ Within telerehabilitation, the technologies used and form of interaction may range from sharing of information or therapy programs through e-mail to videoconferencing in real time. We refer primarily to video-conferencing applications throughout our discussion below.

During the COVID-19 pandemic, stroke patients have experienced reduced access to rehabilitation services, both in hospital and again once back home in community settings. The use of telerehabilitation was necessary to provide at least some access to rehabilitation and to prevent spread of infectious disease. In general, teams were able to adapt existing face to face programmes for remote delivery using videoconferencing platforms. Most people with stroke who receive telerehabilitation services were satisfied with the service.⁴ However, as the relationship between COVID-19 and the provision of healthcare settles to a new equilibrium, it is crucial that we take stock and plan a path for the future. Telerehabilitation may be here to stay but there are obstacles, challenges and trade-offs to be considered and overcome. A shift from conventional face to face rehabilitation programmes to online or hybrid programmes should not be considered inevitable.⁵ Such ~~radical~~ changes in the neurorehabilitation landscape should only be considered on the basis that standards are maintained or improved; access must be inclusive; and there should be a commitment to continue collecting data to examine

acceptability, feasibility and efficacy.⁵ The costs of telerehabilitation should be considered in terms of economic, environmental and social costs.

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The evidence supporting the efficacy of telerehabilitation after stroke is still emerging. A Cochrane Review published in 2020 identified studies which compared telerehabilitation with usual care or in-person rehabilitation in the early and late subacute stages and chronic stages after stroke.⁴ Most studies included in the review considered hybrid models of care involving some sessions offered in person and others offered remotely using information and communication technologies, suggesting this model to be most viable. Overall, there were no significant differences in outcome between those receiving telerehabilitation and those receiving in-person care, either for activities of daily living (two studies, n=75 participants) or upper limb function (three studies, n=170 participants).⁴ These findings were based on a small number of studies, but suggest that, at least for the outcome measures recorded, a telerehabilitation approach might be as effective as in-person care.

Content analysis of telehealth consultations in general, suggests that the use of videoconferencing alters the nature of patient-clinician interactions. Advantages of videoconferencing include being able to involve multiple family members in the consultation (regardless of location) and having the ability to see the person interacting in their own home environment. However, Hammersley and colleagues examined audio recordings in a general practice setting in the United Kingdom and found that videoconferencing consultations were shorter, and people raised fewer problems than in in-person consultations.⁶ In-person consultations also appeared to offer more opportunity for patient education and counseling. Seuren et. al (2020) found that patients with heart failure had to take on many unfamiliar roles usually performed by a health care professional such as fitting and reading monitoring devices.⁷ Positioning the camera to perform physical assessment was also challenging. High quality stroke rehabilitation services rely on a comprehensive assessment of the person's impairments

and function. Restricted ability to assess the person remotely could well impact the treatment plans. For people with significant motor impairment after stroke who would usually receive “hands on” therapy, alternative approaches would be required and perhaps necessitate family involvement. A further study involving people with dementia and their families reported that the person with dementia was less likely to be included in telehealth consultations as the interaction was predominantly directly between the family member and the health professional.⁸

The relationship between the health professional and person with stroke is fundamental to stroke rehabilitation. Focus groups with people participating in an intensive upper limb rehabilitation program revealed that participants valued collaborative relationships and the psychosocial components of the program.⁹ A fundamental assumption of relationship based care is that authentic human connection is the essence of caring.¹⁰ The Chair of the Royal College of General Practitioners (UK), recently noted, “If the trusting relationship between a patient and a health professional were a drug, we would marvel at its effectiveness”.¹¹ While health professionals can build relationships remotely there are multiple barriers, and more work is required to explore relationships during telehealth and take steps to address issues.¹²

Disruption brings about the opportunity for change. The widespread uptake and acceptance of telerehabilitation means that services and clinicians have been able to think about what could and should be done differently to improve outcomes for patients. Changes in the model of service delivery to a telerehabilitation model also have implications for health professionals. People are drawn to work in caring professions due to a desire to work *with* people. A telerehabilitation initiative in Canada involving six trials found that therapists were often reluctant to use the technology and when given the option, preferred face-to-face therapy. Telerehabilitation was more acceptable to therapists in the trials as an adjunct and when quick follow-up assessments were required¹³. A move to telehealth has changed the nature of caring

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and in many cases added more administrative burden and the need to be competent in using information and communication technologies. This also became apparent in the Canadian telerehabilitation trials where technical problems impacted on therapist's willingness to use the approach¹³. Spending hours at a time videoconferencing can take a toll and result in feeling more fatigued than normal. The nature of videoconferencing means that it can be harder to read body language. It can also be more challenging to 'take turns' and you have to work harder to decide when and how much to speak.¹⁴ In a time of workforce shortages¹⁵ it is important to consider how these factors may impact on retention of health professionals.

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While telerehabilitation is often suggested as a way of increasing the accessibility of therapies there is also a risk of excluding certain populations. The so-called 'digital divide' refers to lack of access to digital technologies and connectivity, lack of motivation to use digital health technologies and lack of skills and education in using technologies.¹⁶ Those who are at risk of missing out on telerehabilitation because of the digital divide include those from lower socioeconomic backgrounds, older people, and individuals with disability.¹⁷ People with stroke who experience communication and/or cognitive impairment are also likely to have more difficulties than those without. Although telerehabilitation may have the most potential to benefit people with stroke in rural and remote areas, data show that these areas have the lowest levels of internet access.¹⁸ So, whilst it is true that inequalities currently exist in accessing in-person stroke rehabilitation,¹⁹ offering telerehabilitation as the primary service model may not solve the problem.

However, there are circumstances in which telerehabilitation may improve access to treatment. In some healthcare settings around the world, traveling for rehabilitation can be inconvenient, difficult, or impossible and use of online technology can assist in overcoming this barrier. People with stroke are now able to seek out health professionals with expertise regardless of

their location in the world and this should offer the person more choice and control over their rehabilitation program.

Telerehabilitation services are often assumed to be less expensive than clinic or home-based services as travel time and transport costs are eliminated. Alternatively, the staff requirements are likely to be similar to in-person care unless group-based treatments become widely used.²⁰ Rigorous economic evaluations which test these assumptions are currently lacking.⁴ For example, it is possible that while there are reductions in travel time there are increased inefficiencies due to missed appointments and technical difficulties interrupting treatment sessions. Investment in hardware, software and technical support officers may also be required and ongoing maintenance costs should be considered.

While hardware and software have improved considerably in the last decade there are multiple obstacles to a seamless telerehabilitation experience. The regulatory environment, policies and mechanisms for reimbursement need to develop further so that they match the level of other healthcare services.²¹ Aligning telerehabilitation platforms amongst health care providers and measures to ensure data privacy require ongoing attention. Longer term reimbursement mechanisms are required to provide certainty for health professionals and members of the public.

In conclusion, telerehabilitation services certainly have a lot to offer and are likely here to stay. More work is required to compare not just the outcomes of telerehabilitation and whether they are equivalent to in-person rehabilitation, but also to understand the process of telerehabilitation and how the content of consultations and relationships are altered. Although often presented as a more efficient model of care there are few economic evaluations and our experiences have been that additional investments in technology support (for staff and patients) is a critical factor in success. Offering patients choice (telerehabilitation, in-person, hybrid

model) and evaluating choices, in terms of who prefers what modality, will be important in designing new services and meeting the needs of our community.

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