

## Digital Healthcare Focus: Integrating Telerehabilitation in Rehabilitation Care



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In this space I will explore monthly topics, from concepts to technologies, related to the necessary steps to build Digital Healthcare Systems. For the month of December 2020, I have invited Dr Paula Amorim to co-author this inaugural column. She will share her view on 'the challenges and opportunities of integrating telerehabilitation in rehabilitation care'; next month we will open 2021, looking onto liability issues of artificial intelligence (AI) use in hospitals.

It is estimated that more than one billion people worldwide live with some form of disability, something close to 15% of the world population (based on 2010 world population estimates) (World Health Organization 2011) . The number of years of life lived with disabilities (YLDs) has increased globally, from 562 million to 853 million between 1990 and 2017 (James et al. 2018) . To these numbers we should add the consequences of the COVID-19 pandemic, whose real impact on disability is still unknown.

However, the existing rehabilitation care solutions have not been shown to be sufficient to ensure the needs of the population with chronic disabilities. In addition to the direct costs of healthcare, there are transportation costs and indirect costs resulting from absenteeism of informal caregivers.

To ensure the *continuum* of care, it is urgent to find cost-effective solutions that aim to integrate the various levels of rehabilitation care. This will facilitate good clinical practices and adequate monitoring through the clinical pathway of each citizen.

In response to this desire, telerehabilitation (TR) presents a set of technological solutions and is a promising way to increase the training of citizens in self-management of their health. TR is a recent branch of Telehealth and refers to the provision of distance rehabilitation care through information and communication technologies for evaluation, monitoring, prevention, intervention, supervision, education or counselling (Brennan et al. 2010).

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The technology used in TR includes videoconferencing platforms, wearable devices, audio and video communication and social media, as well as many research-driven prototypes housed on a variety of platforms. More complex solutions incorporate physical robots or virtual reality equipment placed in the patient's home, or the use of AI-based systems.

Studies using off-the-shelf technology show that TR is feasible for ambulatory rehabilitation and high levels of satisfaction were recorded, including among the elderly (Crotty et al. 2014) .

However, despite its relevance, telerehabilitation is not still integrated into rehabilitation services. There is as urgent need to clarify regulations and reimbursement rules to integrate telerehabilitation solutions as another offer in the rehabilitation services portfolios. Health institutions managers who coordinate rehabilitation services must demand this clarification, under penalty of having more costs and failing to provide for the needs of their patients. They also must try and experiment. The COVID-19 crisis only further reinforced this already true imperative.

Telerehabilitation is more needed than ever. Health systems must include reliable, cost-effective and easy-to-use TR solutions as a commonly available service. Ideally, in complementary to conventional rehabilitation, but sometimes as a temporary or last-resource substitute. It is the only way to increase rehabilitation accessibility to all citizens, in a sustainable way and to ensure integrated clinical pathways.

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