



## LETTER TO THE EDITOR

## Pulmonary telerehabilitation: An international call for action



The COVID-19 pandemic has impacted dramatically on people's lives and health care systems worldwide. Resources of the national health services have been focused on the monitoring and management of patients with COVID-19 and so chronic respiratory disease management, namely through pulmonary rehabilitation (PR), has become even more challenging than it used to be before COVID-19.

Following national and international recommendations, PR programmes were advised to suspend their activities and to provide care remotely using telehealth solutions (e.g., phone, video-calls, telerehabilitation).<sup>1,2</sup> Major concerns already existed about the lack of access to PR programmes (either hospital-, primary care- or community-based) worldwide.<sup>3</sup> In Portugal, the reported percentage of patients having access to PR programmes is between 0.5 and 2%.<sup>4,5</sup> This situation has most certainly been aggravated by the COVID-19 outbreak due to the interruption of PR, but also due to the increased number of patients with acquired respiratory diseases that is expected in the coming months. Given the high scientific evidence of PR in improving symptoms, physiological and psychosocial domains in patients with chronic respiratory disease, it is urgent to explore innovative avenues to overcome the past and present difficulties.<sup>3</sup>

During (and most certainly after) this outbreak, the implementation of different technological solutions allowed us to overcome many of the hindrances imposed by forced social distancing. This was the case of telerehabilitation strategies that in the short term have been largely focused on patients who had previous on-site access to PR and on patients with COVID-19.<sup>6–10</sup> In the long run, these may be feasible strategies to increase access to PR for those in need since patients eligible for PR have access to and feel confident using digital technologies.<sup>11</sup> But how prepared are health services to implement telerehabilitation?

According to the World Health Organization, telehealth is the "delivery of health care services, where patients and providers are separated by distance through the use of information and communications technology (ICT).<sup>12</sup> Telehealth can be employed in several clinical areas, such as teleradiology, teledermatology, telepsychiatry and telerehabilitation. Telerehabilitation has been previously defined as the delivery of rehabilitation through a variety of ICT. Similarly to

telehealth, this definition still encompasses a large diversity of procedures within the realm of rehabilitation, where PR can be included.<sup>13</sup> However, pulmonary telerehabilitation is far from being a reality yet. For example in Portugal, in the most recent characterisation of PR, from the 24 centres delivering PR programmes, none was telehealth supported.<sup>4</sup> Although efforts to increase access to PR have been made recently (primary care centres were advised to implement programmes in well-selected patients),<sup>14</sup> telerehabilitation guidance was never provided.

The use of telehealth is increasingly included in national health services.<sup>12</sup> In Portugal there has been a TeleHealth National Centre dedicated to the development and implementation of telehealth solutions since 2016.<sup>15</sup> This centre has produced guidance for teleconsultation, teleradiology, teledermatology and remote patient monitoring. Yet, guidelines for telerehabilitation are still missing. A similar scenario is present in several countries worldwide and therefore guidelines for telerehabilitation are urgently needed but should be broad enough to adapt to all types of rehabilitation.

A fundamental pillar of PR programmes is its multidisciplinary nature to address the needs of patients with chronic respiratory diseases and therefore, to standardise pulmonary telerehabilitation, a joint effort by national organisations, scientific and professional societies is required. This effort should also be developed in articulation with the most relevant international societies in the area of respiratory medicine, such as the European Respiratory Society (ERS) and the American Thoracic Society (ATS). Despite the recognised difficulties, e.g., ATS has publicly acknowledged not being able to endorse a specific approach to PR during the current challenges,<sup>16</sup> it is urgent to find alternatives to conventional PR, whilst seeking to increase access to a higher number of patients who can benefit.

In the process of developing guidelines for telerehabilitation, it could be of interest to start by analysing the available examples of PR programmes already being delivered remotely to patients with chronic respiratory diseases.<sup>17–19</sup> The available literature reports telerehabilitation to be as effective as onsite-PR programmes and with potential for successful implementation even with few resources in patients' homes.<sup>20</sup> Combining this previous knowledge with the experience gathered from the implementation of telerehabilitation in patients with COVID-19 is now required.<sup>9,21,22</sup>

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Pulmonary rehabilitation, even if delivered remotely must preserve its cornerstone components, i.e., exercise training, education, and behaviour change but, a serious debate about the selection criteria, outcome measures, emergency plans, intervention design and equipment/technology is needed. The discussion should also involve technological specialists to aid healthcare providers in selecting and combining cost-benefit and friendly-user telemonitoring technology such as respiratory monitors, pulse oximeters, activity trackers, environmental sensors, monitors of physiological variables (e.g., heart rate, blood pressure, temperature) and communication systems.<sup>23</sup> Concerns about sharing data and meeting General Data Protection Regulation (GDPR) requirements when using the different telemonitoring systems also need to be addressed. Additionally, a significant effort may be needed to try to preserve the social component of PR the role of which is indisputable during on-site programmes but may be lost during telerehabilitation.

Different discussions involving all relevant stakeholders in PR, from patients and families to healthcare providers, policy makers and scientists are urgently needed to shift PR from conventional to telerehabilitation and increase access to this fundamental intervention. Telerehabilitation can be a sustainable solution to the increasing burden of chronic respiratory diseases worldwide.

## Conflicts of interest

The authors have no conflicts of interest to declare.

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