

# Cardiac Rehab in the COVID-19 Pandemic



Traditional cardiac rehabilitation is a medically supervised program that has played a pivotal role in reducing future cardiac events and improving overall quality of life in patients with cardiac diseases. Unfortunately, cardiac rehab has been underused due to a multitude of factors, and evidence shows that only 30% of eligible patients participate in it. Between 2007 and 2011, only 16.3% of patients with Medicare and 10.3% of veterans participated in cardiac rehab.<sup>1</sup> Participation was even lower in women, older adults, and individuals from underserved populations.<sup>1,2</sup> With the evolution of the coronavirus disease 2019 (COVID-19) crisis, most cardiac rehab programs have shut down completely to maintain social distancing. According to statistics from Transcatheter Cardiovascular Therapeutics Data, 2685 cardiac rehab programs that provide services to hundreds of thousands of patients have closed.

However, although the concept of traditional rehab involves a face-to-face encounter between physician and patient, home rehab may provide a sound alternative. According to Dr Randal Thomas, preventative cardiologist and medical director of Mayo Clinic's Cardiac Rehabilitation Program, home-based cardiac rehabilitation is pivotal in keeping patients out of the hospital, enforcing social distancing among high-risk patients, promoting healthier eating at home, improving mental health, and encouraging patients to quit smoking. The American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation published a recent meta-analysis showing that all-cause mortality data for up to 12 months demonstrated no statistically significant differences between center-based and home-based rehab.<sup>1</sup>

Some studies demonstrate that the expansion of home-based rehab might improve participation rates. One of the first studies conducted to assess the feasibility and effectiveness of cardiac rehab at home showed that remote telephone-based delivery of rehab is a viable alternative to

center-based rehab.<sup>3,4</sup> In this study, half of the eligible patients refused to participate in rehab at all due to lack of interest. Of those that were offered to choose between home-based rehab and center-based rehab, 77% chose home-based rehab. Participants in remote rehab were highly satisfied with their care and completion rates approached 89% compared with 73% of those doing face-to-face rehab.<sup>3,4</sup> Furthermore, costs for each program were similar.<sup>3,4</sup>

With the current COVID-19 crisis, telemedicine has become a necessity in providing health care to patients. Unfortunately, the Centers for Medicare and Medicaid Services (CMS) is not reimbursing cardiac rehab telehealth services. According to Randal J. Thomas and Laurence Sperling, a request for emergency, temporary coverage of home-based cardiac rehab has been issued to CMS.<sup>5</sup> The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) has been at the forefront of this battle. This organization has established the Innovative Delivery Model Collaborative (IDMC), a multidisciplinary coalition of volunteers and professionals that work together to foster the successful implementation of home-based programs that meet the traditional standard of care.

So, what exactly does home-based cardiac rehab look like? According to Jonathan Whiteson, MD, medical director of cardiac and pulmonary rehabilitation at New York University, Langone Rusk Rehab, home-based rehab appears unique in different settings. Some patients are being observed in real time, whereas others are given instructions to do on their own with periodic follow-up. Aside from a structured exercise regimen, patients can be monitored with devices and even receive virtual visits from nutritionists and psychologists.<sup>6,7</sup>

The first meta-analysis on telehealth exercised-based cardiac rehab was published in 2016. The main findings of the 11 randomized trials included were that telehealth cardiac rehab appeared to be at least as effective and, in some cases, more effective for improving cardiovascular risk factors, enhancing physical activity levels, improving diastolic blood pressure, reducing cholesterol, and increasing functional capacity.<sup>7</sup>

A recent randomized controlled noninferiority trial study compared the effectiveness of real-time remote rehab to traditional rehab over 12 weeks. The remote rehab arm

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comprised a smart phone and a chest-worn wearable sensor. During exercise training, participants' heart and respiratory rates, single-lead electrocardiogram (ECG), and geospatial data were displayed in the smartphone app for self-monitoring, streamed to a web server, and visualized in the web app for specialist review. Outcomes assessed at baseline and 12 weeks included maximal oxygen uptake (VO<sub>2</sub> max), modifiable cardiovascular risk factors, exercise adherence, motivation, quality of life and program delivery, and medication costs.<sup>8</sup> In this study involving 162 participants, maximal oxygen uptake was comparable in both groups at 12 weeks and remote rehab was noninferior to center-based rehab.<sup>8</sup>

It is important to note that free resources remain available and include public webcasts, YouTube videos, online education, and reading material. The AACVPR is continuously providing information on upcoming webcasts. One such webcast was given by the Canadian association of Cardiovascular Prevention and Rehabilitation on April 8, 2020. In this free webcast, the panel discussed protocols and strategies to transition on-site rehabs to virtual or home-based models. YouTube has become another essential resource. The Henry Ford Health System in Detroit, Michigan, has offered a free, extensive home cardiac rehab program that offers educational materials to any patient around the world on YouTube. The University of Michigan provides a free online step-based aerobic program for patients at home.

Traditional education materials remain options for patients without Internet access. The United Kingdom Heart manual is the most extensively studied self-management book for patients recovering from acute coronary syndromes or open-heart surgery.<sup>1,2</sup> The American Heart Association, University Health Network Toronto Rehabilitation Institute, National Heart Foundation of Australia, and the Veterans Health Administration offer similar textbooks. Each book is tailored to a patient's specific needs and offers secondary prevention topics.

Although the options for home-based care continue to evolve, it is important that all home rehab programs have the content and structure of traditional and center-based care. The AACVPR stresses that a physician medical director should lead all programs and that all patients should undergo a baseline assessment and receive an individualized treatment plan. This plan should consist of nutrition education, weight counseling, mental health evaluation, risk factor control, tobacco cessation, and exercise training.

In conclusion, although many center-based traditional rehab centers have shut down during the COVID-19 crisis,

remote cardiac rehab remains a viable alternative. Virtual telehealth allows patients to exercise in their own homes or other fitness centers while being supervised by a physician or other health care professional by live, 2-way video teleconferencing. Not only does this improve the quality of life for patients during the pandemic, but it also serves to overcome barriers such as transportation and social issues that prohibited patients from normally attending center-based rehab. As Dr Whiteson notes, "It's much better for patients to be engaged with us and to have some guidance than to be left at home on their own and not know what to do."

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