

Cardiac Rehabilitation During COVID-19 Pandemic: Highlighting the Value of Home-Based Programs

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Abstract

Cardiac rehabilitation (CR) is a class I treatment for cardiovascular disease, however, underutilization of these services remains. Home-based CR (HBCR) models have been implemented as a potential solution to addressing access barriers to CR services. Home-based models have been shown to be effective, however, there continues to be large variation of protocols and minimal evidence of effectiveness in higher risk populations. In addition, lack of reimbursement models has discouraged the widespread adoption of HBCR. During the coronavirus 2019 (COVID-19) pandemic, an even greater gap in CR care has been present due to decreased availability of on-site services. The COVID-19 pandemic presents a time to highlight the value and experiences of home-based models as clinicians search for ways to continue to provide care. Continued review and standardization of HBCR models are essential to provide care for a wider range of patients and circumstances.

Keywords: *home-based cardiac rehabilitation, telehealth, prevention*

Introduction

Although most clinicians acknowledge the conceptual value of cardiac rehabilitation (CR), utilization of this class I treatment for cardiovascular disease (CVD) has remained low. Many reasons have been cited, particularly logistic impediments to accessing on-site-based programs (e.g., distance, transportation, scheduling, and availability). Although home-based CR (HBCR) has been increasingly advocated as a potential solution to the problem,¹ published data validating home-based options comparative effectiveness to center-based models with respect to patient outcomes (primarily function and quality-of-life measures) have utilized inconsistent protocols and most have been restricted to patient populations with relatively lower risk profiles.²⁻⁴ Thus, many clinicians have remained skeptical about the utility of HBCR, especially for patients with higher CVD risks and/or clinical complexities. Lack of reimbursement for HBCR has additionally dissuaded many hospitals from standardizing and adopting such innovative models to address gaps in access for CVD patients. However, with the coronavirus 2019 (COVID-19) pandemic, increasing emphasis on social distancing and caregiving strategies to better reach patients outside the hospital, it seems an important time to revisit the value of HBCR. Most on-site CR programs have closed; thus, many clinician leaders are now considering HBCR as an option to preserve delivery of care, avoid delays in enrollment, and mitigate avoidable readmissions.

The Veterans Affairs (VA) Office of Rural Health initiated HBCR in 2010 to improve access to CR for rural veterans. To date, 30 sites have been participating in this initiative and >4,200 patients have been successfully enrolled. The steady growth reflects a pattern of success. The VA HBCR program is low tech, widely accessible, cost-effective, and an easily implementable intervention that provides value for patients.

The program includes the main pillars of CR: exercise prescription, nutrition, stress management, and risk factor modification (i.e., blood pressure management, smoking cessation, and medication adherence) (*Table 1*). Patients are contacted by a CR specialist by phone or video once a week for a total of 12 weeks. Each week, the CR specialist assesses for changes

Table 1. Home-Based Cardiac Rehabilitation Components

	MEASUREMENT	INTERVENTION
Exercise	Duke activity status index	Individualized exercise prescription
	Six-minute walk test	Counseled on physical activity
	Average daily steps (pedometer)	Educate on exercise safety Benefits and components of exercise Logging exercise and activity
Nutrition	Body mass index	Educate about heart healthy diet
	Rate your plate, heart	Food log Refer to dietitian, if needed
	Weight	
Stress management	Patient health questionnaire-9	Teach stress management techniques
	Cardiac self-efficacy scale	Refer to mental health, if needed
Risk factor modification	Blood pressure	Educate about disease and medications
	Smoking status	Educate about symptom management
	Extent of nonadherence assessment	Assist with smoking cessation and refer when needed Relay abnormal vials or symptoms to provider

in health status and weekly vitals, reviews educational topics for a better understanding of heart disease, and collaboratively progresses goals toward a heart healthy lifestyle. An individualized exercise prescription is determined based on initial standardized assessments and tailored to fit lifestyle and home environment. Exercise is progressed weekly based on daily metrics recorded by the patient (i.e., exercise log and pedometer step counts), the patient’s current exercise routine parameters, and the patient’s perceived exertion and tolerance.

Notably, more than one-third of the patients who participated were categorized as having high CVD risk (based on criteria set by the American Association of Cardiovascular and Pulmonary Rehabilitation) and the majority of all patients had numerous elements of complexity (e.g., obesity, multimorbidity, frailty, falls, and depression). All patients are given guidance on how to exercise safely and when and how to trigger emergency medical services. The VA HBCR program has tracked adverse events throughout the years (including emergency room visits, hospitalizations, and additional procedures) and has demonstrated a high level of safety, especially as routine phone call appointments have provided opportunities for the CR clinicians to address and resolve patients’ concerns. The VA program has also used standardized assessment tools to demonstrate consistent and remarkable functional gains, satisfaction, self-efficacy, and other pertinent endpoints (Table 1).

Participating patients have acknowledged many of the well-known attributes of this model of care (i.e., no additional travel to medical facilities, reduced copayments, and reduced

use of paid time off to attend in-person CR).⁵ Moreover, the VA HBCR program is flexible, it has easily adapted to integrate facilities that did not offer on-site services or for on-site programs who wanted to expand access.⁶ Smaller VA facilities can adopt the HBCR program through a hub-and-spoke design, where one VA facility is able to provide CR services to multiple facilities. Technological adjuncts may add benefit to HBCR, although they are not essential at a time when funds have been largely depleted by COVID-19. A strength of the VA HBCR program is the ability to provide a well-structured comprehensive CR program without added technology expenditures.

In exceptional times, like a pandemic, home-based programs can expand to accommodate patients who are suddenly displaced from on-site care, enabling uninterrupted care while both patients and providers can remain safely at home.

Although the COVID-19 pandemic provides an important backdrop to draw attention to the successes of HBCR at the VA, it is also important to emphasize that its utility is independent of the current crisis. Many patients who would benefit from CR have limitations accessing an on-site program. For such patients, CVD remains unremitting, and the absence of CR is associated with increased rehospitalizations, reduced adherence, poorer quality of life, and higher CVD mortality.⁷ In addition to the direct pathophysiological effects of COVID-19 on cardiovascular health, the pandemic has resulted in constrained management, tumultuous hospitalizations, and social isolation of CVD patients. The availability of CR is more important than ever, and HBCR seems a critical component of care.

It is truly remarkable that within the VA, HBCR has not only continued during COVID-19 to serve critical needs of patients, but in some VA facilities has also readily expanded to accommodate veterans who were cut off from on-site programs. Before the COVID-19 pandemic, HBCR initiatives were developed to address already well-noted low referral, enrollment, and utilization of CR services. With the COVID-19 pandemic and the diminished availability of on-site services, the gap in care is even greater. During the COVID-19 pandemic, the Center of Medicare and Medicaid Services has expanded reimbursement for telehealth, thus enabling clinicians to reach patients sequestered at home. However, no

similar payment allowances have been made for HBCR. This is a crucial time for continued assessment of HBCR in higher risk populations, continued development of standardized guidelines for HBCR, and the development of reimbursement models so that CR programs outside of the VA can adopt and implement home-based models that better respond to the broad range of patient needs.

Disclosure Statement

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