

Rural Promising Practice: Remote, Telephone-Based Delivery of Cardiac Rehabilitation

Executive Summary

Coronary heart disease is the result of plaque build-up in the arteries, which can lead to decreased blood flow to the heart. Smoking, blood pressure, cholesterol, diabetes, family history, age, weight, physical fitness and other factors contribute to heart disease risk, which may lead to a cardiac event.

Cardiac rehabilitation is the process by which individuals are restored to their optimal physical, medical and psychological status after a cardiac event, like a heart attack or bypass surgery. Cardiac rehabilitation is a three-phase process that requires engagement.⁷

- Phase 1 begins during inpatient hospitalization and is managed by the patient's physician.
- Phase 2 is a medically supervised outpatient program, which begins following discharge. It is a coordinated, multifaceted program of interventions to optimize a cardiac patient's physical, psychological and social functioning, as well as stabilize, slow or even reverse the progression of the underlying hardening and narrowing of the arteries due to plaque.
- Phase 3 is a lifetime maintenance program emphasizing continuation of physical fitness with periodic follow-up.

Scientific studies show that people who experience a cardiac event significantly increase their likelihood of recovery and subsequent lifespan when they undertake an organized rehabilitation program. In fact, those who complete a cardiac rehabilitation program can increase their life expectancy by up to five years and have 27 percent lower cardiac death rates, 25 percent fewer fatal heart attacks, 21 percent nonfatal heart attacks and an improved quality of life.¹⁻⁵

To address the social, geographic and financial barriers that prevent rural Veterans from accessing cardiac rehabilitation, the U.S. Department of Veterans Affairs (VA) Office of Rural Health (ORH) supported a telephone-based rehab program that delivered in-home cardiac rehabilitation. Veterans first meet in-person with a specialist, often a physical therapist or registered nurse, to learn how to complete the Phase 2 rehab exercises safely. Subsequent exercise sessions occur at the Veteran's home, eliminating the need for travel multiple times a week. Regularly scheduled phone calls with the rehabilitation specialist are dedicated to reviewing curriculum that addresses risk factors, such as smoking cessation and proper nutrition. Veterans may also explain any problems they are having at home or while they exercised.

In this pilot program, rural patients who elected to use home-based rehabilitation reported higher satisfaction and attained higher rates of program completion, compared to those using

on-site facilities. Costs for the two programs were comparable, as were health outcomes after 12 weeks. The project demonstrated that a remote, telephone-based program is an effective and feasible option with strong rates of completion and high levels of patient satisfaction.

Increasingly, local Community Based Outpatient Clinics (CBOCs) will be integrated into the model to allow for local clinical video telehealth support, in addition to in-home clinical video telehealth sessions.

Who Can Use This Rural Promising Practice?

Exercise physiologists, physical therapists, cardiologists, registered nurses and dietitians with advanced training in cardiac rehabilitation can adopt this program. This is especially applicable to clinicians at smaller facilities that serve rural populations and cannot support the costs of a traditional on-site program for Phase 2 cardiac rehabilitation, those facilities in highly rural areas where coming to an on-site program would impose significant travel burden on the Veteran, and for Veterans who are employed who cannot take time off work to attend an on-site program. Findings suggest that a remote telephone-based Phase 2 cardiac rehabilitation program may be a feasible alternative or adjunct to on-site programs, bringing cardiac rehabilitation services closer to the patient and thus increase access to care.

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Need Addressed

For many small hospitals, it is not financially possible to sustain Phase 2 cardiac rehabilitation programs. Currently less than a third of VA Medical Centers are equipped to provide on-site cardiac rehabilitation services. Many smaller facilities, such as VA Community Based Outpatient Clinics (CBOCs), lack sufficient demand to warrant a cardiac rehab program, as well as the physical space for the exercise equipment.

Despite known benefits, some Veterans' access to Phase 2 cardiac rehabilitation may be hindered by factors such as driving distance and travel costs, need for a driver, time away

from work or at-home family obligations.^{5,6} Additionally, many jobs can't or don't accommodate an employee's absence several times a week during the 12-week rehab regiment. This program allows rural Veterans to tailor both the location and the schedule of their rehabilitation sessions.

Telemedicine shows promise in helping to address low completion rates among rural patients. This Rural Promising Practice was created to increase rural Veterans' access to care, but it may also be beneficial for urban and suburban Veterans who do not live near cardiac rehabilitation centers and those who cannot travel in the immediate aftermath of surgery.



Figure 1 A patient begins Phase 2 cardiac rehabilitation exercises.

Implementation

The pilot study coordinators gathered subjects treated at the cardiology clinic, the cardiac catheterization laboratory or the inpatient medical service of the Iowa City VAMC. To be eligible for the study, Veterans demonstrated:

- Acute myocardial infarction or acute coronary syndrome
- Post-coronary artery bypass graft surgery
- Percutaneous coronary intervention
- Stable angina, as approved by a physician
- Age 18 or older
- Ability to speak English
- Medical clearance by a physician to participate in Phase 2 cardiac rehabilitation
- Approval from a primary care physician or cardiologist

Enrollment criteria were the same for both home cardiac rehabilitation and onsite participants. The participants' mean age was 63 years old. They were predominantly male (more than 98 percent in both groups), Caucasian (more than 95 percent in both groups), married (more than 66 percent in both groups) and had a high school education. Of those participating in the project, 43 chose the home cardiac rehabilitation program while 12 chose the on-site ("usual care") program.

The only significant differences between the two groups were:

- Lower percentages of patients with acute myocardial infarction (10 percent vs. 33 percent) in the in-home vs. the on-site group
- Post-coronary artery bypass graft (7 percent vs. 25 percent) in the in-home vs. the on-site group
- A higher percentage of patients with stable angina (33 percent vs. zero) in the onsite group

Participants who chose the home cardiac rehabilitation program received a portable exercise peddler, exercise bands, pedometer, heart rate monitor and blood pressure cuff, as well as instructions how to use each. Guidance was provided on how to contact local emergency medical services in the event of chest pain or a medical emergency. The clinicians managing the program's day-to-day operations then walked Veterans through rehabilitation content via telephone each week for 12 weeks, including nutrition counseling, medication adherence, smoking cessation and stress management. Participants were prescribed individualized exercise programs that involved walking or the portable exercise peddler, based on mobility of the upper and lower extremities. Ideally, participants performed 30-minute exercise sessions three times per week and tracked the perceived exertion of each session. As necessary, they consulted with the cardiologist who oversees the program.

The researchers took five clinical measures, recording in-person at the beginning of the program and again after 12 weeks. Measures included:

- Blood pressure
- Heart rate
- Lipids
- Weight
- Body mass index

Researchers also recorded:

- Medication adherence
- Depressive symptoms
- Quality of life (e.g., physical limitation, angina stability, angina frequency, treatment satisfaction, disease perception) as measured by the Seattle Angina Questionnaire
- Knowledge of coronary heart disease
- Satisfaction with care

They also made a comparison of the cost of the home-based program to the on-site program. Cost data for the home cardiac rehabilitation group included personnel salary, equipment and materials.

"We need to be able to connect with Veterans wherever they live. This telephone-based model of care puts the Veteran first and brings us to them throughout their recovery."

—Bonnie Wakefield, R.N., Rural Promising Practice lead

Promising Results

To determine the results of home-based cardiac rehabilitation when patients are given a choice between a site-centered or home-based program, this study reviewed the reach (patient and provider uptake), effectiveness (safety and clinical outcomes) and implementation (time and costs) of a remote, telephone-based Phase 2 cardiac rehabilitation program. This program demonstrated each of the criteria necessary to be a Rural Promising Practice.

Increased access: This Rural Promising Practice enabled Veterans to engage in cardiac rehabilitation at their homes on their own schedules, overcoming travel barriers typical in rural areas. Conversely, on-site participants traveled an average of 15 miles round-trip to attend programs at VA or community facilities. Travel distance ranged from three to 36 miles. One on-site participant opted not to attend cardiac rehabilitation due to driving distance. Approximately 100 patients per year at the Iowa City VA Medical Center (VAMC) are eligible for the program.

Evidence of clinical impact: No significant differences in clinical outcomes existed between home- and on-site cardiac rehabilitation patients after 12 weeks. Additionally, program completion rates were higher in the home cardiac rehabilitation group, where 36 of 43 participants (84 percent) completed at least 10 program calls; the completion rate for those who attended the on-site program was 73 percent.

Customer satisfaction: Finally, in a questionnaire rating participant satisfaction, patients in the home cardiac rehabilitation group (n=40) expressed a high level of satisfaction with the program, respondents agreed at a level of 4.8—with 5 being strongest—that they “would recommend this program to other Veterans who would need it.” See Table 1 for questions and average responses.

Return on investment: An analysis showed costs per patient were comparable among the on-site and the home-delivered cardiac rehabilitation programs. Since VA provides cardiac rehabilitation programs at hub sites, patients can opt to avoid long travel times and receive care at pre-approved private facilities. Analysis showed that the cost of the remote home-based program was comparable to the costs VA paid for patient participation in a private contracted on-site program. When delivered by an exercise physiologist, the cost of the program for the 48 home participants was comparable to contracted costs (\$1,245 per each at-home patient compared to \$1,157 per on-site patient). Previous studies also demonstrated that cost and outcome differences between the two groups were minimal.⁹⁻¹³

Operational feasibility: The program now an integral facet of cardiac treatment at the Iowa City VAMC as well as 12 additional VA sites of care:

- Ann Arbor, Mich.
- Birmingham, Ala.
- Erie, Pa.

Office of Rural Health Rural Promising Practice Criteria

Increased Access: The program or strategy demonstrated measurable improvements in access to care and/or services. Examples include reduction in distance traveled to care, reduction in wait times, improved care coordination, and reduction in missed appointments.

Evidence of Clinical Impact: The program or strategy demonstrated positive results on outcomes of importance to rural Veterans based on evaluations conducted during the implementation of the program and at the end of the pilot period.

Customer Satisfaction: The program or strategy demonstrated patient, provider, partner, and/or caregiver satisfaction.

Return on Investment: The program or strategy demonstrated an improvement in health system performance by 1) reducing the per capita costs of health care, and 2) improving or at least maintaining health outcomes, and/ or 3) positively impact the health care delivery system.

Operational Feasibility: The program or strategy demonstrated feasibility of implementation and known barriers and facilitators of success can easily be shared across implementation sites.

Strong Partnerships and/or Working Relationships: The program or strategy included VA and/or non-VA partners to maximize the efficacy of the intervention.

- Gainesville, Fla.
- Manchester, N.H.
- Minneapolis
- Northern California
- Pittsburg, Penn.
- Portland, Ore.
- Salt Lake City
- San Francisco
- West Haven, Conn.

Strong partnerships and/or working relationships: Although not employed in the program’s pilot phase, video-telecommunication is now frequently used for consult appointments at the Veteran’s local CBOC. As the program is further refined, telehealth appointments are expected to be more frequently used for follow-up appointments and eventually to become a standard provider option. Video feeds allow for troubleshooting with a patient from a local clinic, without the need to travel to a VAMC. This collaboration between care teams strengthens working relationships between clinicians at VAMCs and CBOCs.

Adoption Considerations

The telephone-based cardiac rehabilitation program is now a routine and systematic part of cardiac treatment at the Iowa City VAMC and has been successfully adopted at additional VA facilities.

Sites wishing to implement a remote, telephone-based program must consider the following:

- Current cardiac rehab services offered to patients at their facility
- How adoption of this program affects current treatment options
- Number of patients that could potentially benefit from these services
- Staffing and faculty support
- Space for running the program
- Funding and sustainment
- Timeline for any necessary hiring
- Support from facility leadership

Since exercises are unsupervised and vital signs like heart rate are not monitored in real-time in this model, pre-approval from a physician familiar with each patient is crucial. Pilot program organizers recommend following similar eligibility criteria at new sites, although each facility may modify or make them more restrictive, based on the health status of their potential participants.

Conclusion and Next Steps

These findings suggest that a remote, telephone-based Phase 2 cardiac rehabilitation program may be a feasible alternative to adjunct or on-site programs, constituting a Rural Promising Practice for bringing cardiac rehabilitation services closer to the patient.

Clinicians at smaller hospitals that cannot support a traditional program could adopt the program, or could be a service in a wider range of options for patients who could benefit from Phase 2 cardiac rehabilitation using telehealth technology.

In addition to the existing 13 sites where this model is currently in place, eight more VA facilities will be added in fiscal year 2016. The dissemination of this Rural Promising Practice significantly increases the capacity of VA to offer cardiac rehabilitation directly, rather than contracting with private community facilities.

Increasing integration of video telehealth consults at local CBOCs, as well as the growing potential to implement secure clinical video telehealth from the home mean this Rural Promising Practice may have additional applications for new audiences.

This Rural Promising Practice also represents an opportunity for engagement with the private sector, where this model could also be successful. As the nation's largest provider of telehealth care, VA is in a unique position to share its expertise.

Table 1. Patient satisfaction among telephone-based rehab participants

Forty people responded to the survey, in which the highest score possible was five.

Question	Mean (SD)
The information I was given about the program before I started was helpful.	4.6 (0.6)
The educational information given to me during the rehab program was helpful.	4.2 (0.5)
Completing the rehab program at home was convenient.	4.8 (0.5)
The person who guided my cardiac rehab was helpful.	4.8 (0.5)
The person who guided my cardiac rehab had a good understanding of my medical condition.	4.7 (0.6)
I would recommend this program to other Veterans who would need it.	4.8 (0.4)

Available Resources

The pilot program administrators of this Rural Promising Practice created several resources to aid in its replication at other sites of care, which are available upon request. They include:

- Personalizeable Implementation Manual for clinicians who want to begin offering telephone-based cardiac rehabilitation
- Patient manual, to describe how the program operates and the exercises
- Exercise worksheets for National Cardiac Rehabilitation Week

Access them at <http://www.ruralhealth.va.gov/providers/promisingpractices>.

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To Learn More

The Rural Promising Practices initiative is overseen by the U.S. Department of Veterans Affairs (VA) Office of Rural Health (ORH) as part of its targeted, solution-driven approach to improving care for the 3 million Veterans living in rural communities who rely on VA for health care. As VA's lead advocate for rural Veterans, ORH works to see that America's Veterans thrive in rural communities. To accomplish this, ORH leverages its resources to increase rural Veterans' access to care and services. To discuss implementing a Rural Promising Practice at your facility or to learn more, visit www.ruralhealth.va.gov or email rural.health.inquiry@va.gov.



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