

Remote Delivery of Cardiac Rehabilitation

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Background & Purpose

- ▶ Cardiac rehabilitation provides significant benefit for persons with cardiovascular disease yet geographic access to on-site programs is problematic in VA
- ▶ Purpose: test the feasibility and safety of a Phase 2 outpatient remote cardiac rehabilitation program
 - Clinical outcomes
 - Patient and provider acceptance & uptake
 - Safety
 - Compare costs of home-based program to fee-basis CR costs

▶ Inclusion criteria

- acute myocardial infarction/acute coronary syndrome
- post coronary artery bypass graft surgery (CABG)
- percutaneous coronary intervention
- stable angina
- age 18 years or older
- English speaking
- medically cleared by cardiology to participate

► Exclusion criteria

- decompensated congestive heart failure
- unstable angina
- complex ventricular arrhythmias
- CABG surgery redo
- ejection fraction (EF) < 35%
- history of arrhythmia with syncope
- severe symptomatic valvular disease
- resting systolic blood pressure > 200 mm Hg or diastolic blood pressure > 100 mm Hg
- dementia or other cognitive impairment
- life expectancy less than one year due to advanced medical illness
- other medical illness precluding participation.

Enrollment

- ▶ Screened patients
 - Inpatient admissions
 - Cath lab
 - Cardiology Clinic
- ▶ Physicians approached re: suitability
- ▶ Patients were given a choice of the remote or face-to-face program
- ▶ Approached while hospitalized, or at the hospital, for enrollment
- ▶ If local program selected, referral to VA staff to arrange for enrollment
- ▶ Physicians entered consult in CPRS

Intervention

- ▶ Based on a Phase 2 CR program endorsed by the American Heart Association (AHA)
- ▶ AHA workbook and DVD “*An Active Partnership for the Health of Your Heart*”
- ▶ Investigator developed patient workbook (logs for recording exercise; food diaries; written instructions for equipment provided; and written materials to supplement the *Active Partnership* book)
- ▶ Individualized exercise prescription; asked to exercise (i.e., walking, or upper arm exercise for individuals with limited mobility) ideally at least 30 minutes 3 times per week

Intervention

- ▶ Provided participants with portable exercise peddler, pedometer, heart rate monitor, and blood pressure cuff
- ▶ Participants were also instructed how to contact local EMS in the event of chest pain or a medical emergency
- ▶ Weekly scheduled phone calls with study staff for 12 weeks

Participants

- ▶ 107 eligible patients
 - 45 refused participation
 - 62 participated
 - 48 (77%) chose home-based program
 - 14 (23%) chose local program
- ▶ Mean age of 64 (SD 7.5) years.
- ▶ Caucasian
- ▶ Male
- ▶ High school education
- ▶ Two-thirds married

Participants

- ▶ Reason for referral
 - PCI/Stent (n=25)
 - Stable Angina (n=18)
 - AMI/ACS (n=9)
 - Post CABG (n=7)
 - Other CAD (n=3)

Outcomes

- ▶ Blood Pressure
- ▶ Heart Rate
- ▶ Cholesterol, high density lipoprotein, low density lipoprotein, triglycerides
- ▶ Body mass index
- ▶ Self-Reported Medication Taking
- ▶ Geriatric Depression Scale
- ▶ Seattle Angina Questionnaire (Physical Limitation, Angina Stability, Angina Frequency , Treatment Satisfaction, Disease Perception)
- ▶ Knowledge
- ▶ Satisfaction with home-based program
- ▶ Costs

Results

- ▶ No significant changes over time between groups at 12-weeks in outcomes, hospitalizations, or ER visits
- ▶ Remote CR participants high completion rate
 - Attended 89% of scheduled sessions
- ▶ Face-to-face CR program completed 73% of authorized visits
 - One patient did not attend CR because of the distance from home
- ▶ Face-to-face participants traveled an average of 15 miles round trip to attend onsite programs (range 3 to 36 miles)

Satisfaction of Remote Participants

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	4.7 (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 (0.4)
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)

*Rating scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree

Costs

	Using Estimated Costs for Remote Program as Administered	Actual Estimated costs for a constant panel of 100 patients/year
Contract cost per patient ¹	\$1,157	\$1,157
Remote delivery cost per patient ²	\$1,245	\$807
Absolute difference	\$88	\$350

¹ costs for contract patients are actual mean cost per patient referred

² using GS-9 salary therapist

Conclusions

- ▶ Remote CR participants remained engaged in the program and outcomes were comparable between groups
- ▶ Drop-out rate was low and there were no adverse events
- ▶ Home-based CR is not only safe and effective, but brings services closer to the patient and their home, a fundamental principal in the improvement of care for rural patients