Cardiac Rehabilitation Use Among Veterans With Ischemic Heart Disease

Referral to exercise-based cardiac rehabilitation (CR) is 1 of 9 performance measures for secondary prevention after hospitalization for myocardial infarction (MI), percutaneous coronary intervention (PCI), and/or coronary artery bypass graft (CABG).\(^1\)\(^2\) Although CR programs significantly reduce morbidity and mortality in patients with ischemic heart disease (IHD),\(^3\) they are vastly underused among US Medicare beneficiaries.\(^4\) The use of CR programs in the Veterans Health Administration (VA) has not been described. Therefore, we sought to determine (1) the proportion of eligible veterans with IHD who participate in CR, (2) whether the presence of an on-site CR program is associated with greater participation, and (3) the characteristics of the CR participants.

Methods | National VA inpatient files were used to identify all patients discharged from VA facilities with a diagnosis of MI, PCI, and/or CABG during fiscal years 2007 to 2011 (eMethods in Supplement 1). The number of patients who participated in VA CR programs during the 12 months following hospitalization was determined from VA outpatient files. The number of eligible patients who participated in non-VA CR programs was determined from non-VA care files and from the Centers for Medicare and Medicaid Services data. Institutional review board approval was obtained from the San Francisco Veterans Affairs Medical Center and the University of California, San Francisco.

Results | Between October 1, 2006, and September 30, 2011, a total of 88,826 unique patients were hospitalized for MI, PCI, or CABG at 124 VA facilities. Of these, 9,123 patients (10.3%) participated in 1 or more sessions of outpatient CR during the 12 months after hospitalization (eTable 1 in Supplement 1). Overall, there was no significant difference in participation by sex: 10.3% of men (8,976 of 87,359) and 10.0% of women (143 of 1426) received CR (\(P = .76\)), and 8.0% of whites (2,093 of 26,150) and 8.3% of nonwhites (587 of 7,068) received CR (\(P = .41\)). Overall, 10.4% of whites (7,126 of 68,259) and 9.8% of nonwhites (1,610 of 16,397) received any CR (\(P = .02\)). Whites were more likely than nonwhites to attend non-VA CR programs (5.7% vs 2.8%; \(P < .001\)) and less likely than nonwhites to attend on-site VA CR programs (4.9% vs 7.2%; \(P < .001\)).

From fiscal years 2007 to 2011, participation rates remained stable between 8.5% and 8.7% for all years. There was a significant interaction between the presence of an on-site CR program and the distance to the closest VA medical center (\(P < .001\) for interaction). Therefore, we stratified analyses by the presence (35 VA facilities) or absence (89 VA facilities) of an on-site CR program (eTable 2 and eTable 3 in Supplement 1).

Overall, patients were more likely to participate in CR if they had been hospitalized at a VA facility with vs a facility without an on-site CR program (15.5% vs 7.5%; \(P < .001\)). Facilities with vs those without on-site CR programs had higher rates of participation (Figure). In multivariable models, the characteristics associated with greater participation were younger age, marriage, higher body mass index, living closer to a VA facility, hyperlipidemia, absence of stroke, chronic kidney disease, peripheral vascular disease, chronic lung disease, and hospitalization for CABG (vs PCI or MI) (Table). After controlling for these variables, the presence of an on-site CR program was associated with a greater odds of attending a CR program (odds ratio, 1.99; 95% CI, 1.89-2.10; \(P < .001\)).

Discussion | In this study of 88,826 veterans hospitalized for MI, PCI, or CABG, 10.3% of eligible patients participated in 1 or more sessions of outpatient CR. Both the presence of an on-site CR program and patient proximity to a VA facility were associated with greater participation in CR. However, participation was low regardless of the presence (15.5%) or absence of an on-site CR program.

The participants were hospitalized October 1, 2006, to September 30, 2011. All differences were significant at \(P < .001\). CABG indicates coronary artery bypass graft; IHD, ischemic heart disease; MI, myocardial infarction; and PCI, percutaneous coronary intervention.
absence (7.5%) of an on-site program. These findings suggest that new patient-centered delivery strategies must be developed to solve the seemingly intractable challenge of CR underuse.  

David W. Schopfer, MD, MAS
Steven Takemoto, PhD
Kelly Allsup, BS
Christian D. Helfrich, PhD
P. Michael Ho, MD
Daniel E. Forman, MD
Mary A. Whooley, MD

Author Affiliations: Department of Medicine, San Francisco Veterans Affairs Medical Center, San Francisco, California (Schopfer, Takemoto, Whooley); New England Geriatric Research, Education, and Clinical Center, Veterans Affairs Boston Healthcare System, Boston, Massachusetts (Allsup, Forman); Northwest Health Services Research and Development Center of Excellence, Veterans Affairs Puget Sound Healthcare System, Seattle, Washington (Helfrich); Division of Cardiology, Denver Veterans Affairs Medical Center, Denver, Colorado (Ho); Department of Medicine, Division of Cardiology, University of Colorado Health Sciences Center, Denver (Ho); Division of Cardiovascular Medicine, Veterans Affairs Boston Healthcare System, Boston, Massachusetts (Forman); Department of Medicine, Cardiovascular Division, Brigham and Women’s Hospital, Boston, Massachusetts (Forman); Department of Medicine, Harvard Medical School, Boston, Massachusetts (Forman); Department of Medicine, University of California, San Francisco (Whooley); Department of Epidemiology and Biostatistics, University of California, San Francisco (Whooley).

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Corresponding Author: David W. Schopfer, MD, MAS, San Francisco Veterans Affairs Medical Center, 4150 Clement St (111A1), San Francisco, CA 94121 (david.schopfer@gmail.com).

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Study concept and design: Schopfer, Takemoto, Allsup, Helfrich, Forman, Whooley.

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Drafting of the manuscript: Schopfer, Takemoto.

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Statistical analysis: Schopfer, Takemoto, Whooley.

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Study supervision: Forman, Whooley.

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