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Gaps in Referral to Cardiac Rehabilitation of Patients Undergoing Percutaneous Coronary Intervention in the United States

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CME Objective for This Article: After reading this article, the reader should be able to: 1) cite several indications for referral to cardiac rehabilitation; 2) identify several benefits of participation in cardiac rehabilitation after myocardial infarction and/or PCI; 3) discuss recent national trends in post-PCI cardiac rehabilitation referral patterns; and 4) discuss the relative predictive values of patient demographics, clinical presentation, insurance status, and hospital-level factors for referral to cardiac rehabilitation after PCI.

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ABSTRACT

BACKGROUND Rates of referral to cardiac rehabilitation after percutaneous coronary intervention (PCI) have been historically low despite the evidence that rehabilitation is associated with lower mortality in PCI patients.

OBJECTIVES This study sought to determine the prevalence of and factors associated with referral to cardiac rehabilitation in a national PCI cohort, and to assess the association between insurance status and referral patterns.

METHODS Consecutive patients who underwent PCI and survived to hospital discharge in the National Cardiovascular Data Registry between July 1, 2009 and March 31, 2012 were analyzed. Cardiac rehabilitation referral rates, and patient and institutional factors associated with referral were evaluated for the total study population and for a subset of Medicare patients presenting with acute myocardial infarction.

RESULTS Patients who underwent PCI (n = 1,432,399) at 1,310 participating hospitals were assessed. Cardiac rehabilitation referral rates were 59.2% and 66.0% for the overall population and the AMI/Medicare subgroup, respectively. In multivariable analyses, presentation with ST-segment elevation myocardial infarction (odds ratio 2.99; 95% confidence interval: 2.92 to 3.06) and non–ST-segment elevation myocardial infarction (odds ratio: 1.99; 95% confidence interval: 1.94 to 2.03) were associated with increased odds of referral to cardiac rehabilitation. Models adjusted for insurance status showed significant site-specific variability in referral rates, with more than one-quarter of all hospitals referring <20% of patients.

CONCLUSIONS Approximately 60% of patients undergoing PCI in the United States are referred for cardiac rehabilitation. Site-specific variation in referral rates is significant and is unexplained by insurance coverage. These findings highlight the potential need for hospital-level interventions to improve cardiac rehabilitation referral rates after PCI. (J Am Coll Cardiol 2015;65:2079–88) © 2015 by the American College of Cardiology Foundation.

Participation in cardiac rehabilitation after myocardial infarction and/or myocardial revascularization is associated with better clinical outcomes, including lower all-cause mortality, cardiac-specific mortality, re-hospitalization, revascularization, and cardiovascular disease–related functional disability and mood disorders in patients with coronary artery disease (CAD) (1–5). Numerous national and international guidelines endorse cardiac rehabilitation for chronic stable angina, and after acute coronary syndromes, percutaneous coronary intervention (PCI), and cardiac surgery (6–13). In addition, referral to cardiac rehabilitation after acute myocardial infarction (AMI) or PCI represents a newly reported performance measure instituted by the Centers for Medicare and Medicaid Services (CMS) in 2014 (14).

Lack of referral to cardiac rehabilitation is an important impediment to participation in rehabilitation programs (15,16). Although previous regional analyses demonstrated low rates of referral after PCI, it is unclear whether post-PCI referral to

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