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Underutilization of Coronary Artery Disease Testing Among Patients Hospitalized With New-Onset Heart Failure

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ABSTRACT

BACKGROUND Although ischemic coronary artery disease (CAD) is the most common etiology of heart failure (HF), the extent to which patients with new-onset HF actually undergo an ischemic work-up and/or revascularization is not well defined.

OBJECTIVES This study sought to analyze the patterns of testing for ischemic CAD and revascularization in patients with new-onset HF.

METHODS This was a retrospective cohort study using Truven Health MarketScan Commercial and Medicare databases from 2010 to 2013. The occurrence of noninvasive and invasive ischemic CAD testing and revascularization procedures were examined among patients with new inpatient HF diagnoses during the index hospitalization and within 90 days of admission.

RESULTS Among 67,161 patients identified with new-onset HF during an inpatient hospitalization, only 17.5% underwent testing for ischemic CAD during the index hospitalization, increasing to 27.4% at 90 days. Among patients with new-onset HF, only 2.1% underwent revascularization during the index hospitalization for HF; by 90 days, the revascularization rate had increased to 4.3%. Of the tests performed for ischemic CAD, stress testing (nuclear stress testing or stress echocardiography) was performed in 7.9% of new-onset HF patients during the index hospitalization (14.6% within 90 days), whereas coronary angiography was performed in 11.1% of patients during the index hospitalization (16.5% within 90 days). In adjusted analyses, HF patients carrying a baseline diagnosis of CAD had greater odds of noninvasive ischemic testing (odds ratio: 1.25; 95% confidence interval: 1.17 to 1.33; $p < 0.0001$), as well as invasive ischemic testing (odds ratio: 1.93; 95% confidence interval: 1.83 to 2.05; $p < 0.0001$), at the index hospitalization than those without baseline CAD.

CONCLUSIONS The majority of patients hospitalized for new-onset HF did not receive testing for ischemic CAD either during hospitalization or within 90 days, which suggests significant underutilization of ischemic CAD assessment in new-onset HF patients. (J Am Coll Cardiol 2016;68:450–8) © 2016 by the American College of Cardiology Foundation.

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Heart failure (HF) is a major cause of morbidity and mortality in an increasingly aging population, resulting in a high burden to patients and to the health care system (1,2). In fact, HF is one of the only cardiovascular diseases for which the rates of hospitalization and mortality have progressively worsened over the past 25 years (3,4). More than 915,000 new cases of HF are diagnosed in the United States each year (1,5), and at age 40, there is a 20% overall lifetime risk of developing HF (6).

Many patients with HF also have concomitant coronary artery disease (CAD) (7,8). The estimated prevalence of CAD in patients with HF ranges from 50% to 65% (9,10). The presence of CAD is common, not only in patients with HF with reduced ejection fraction (HFrEF), but also in patients with HF with preserved ejection fraction (11,12). Epidemiological data further demonstrate that the most common cause of HF is no longer hypertension or valvular heart disease, but rather ischemic CAD (6). This is relevant, not only because ischemic CAD represents a potentially treatable (or reversible) cause of HF, but also because the presence of CAD can be synergistically and independently associated with worsened long-term outcomes. The recently reported 10-year outcomes of the STICH (Surgical Treatment for Ischemic Heart Failure) trial demonstrated a mortality benefit of revascularization with coronary artery bypass graft (CABG) surgery over optimal medical therapy for patients with ischemic cardiomyopathy (13). Thus, identification of an underlying ischemic etiology of HF is integral to clinical management strategies for HF. The 2013 American College of Cardiology (ACC)/American Heart Association (AHA) guidelines for the management of HF currently designate a Class IIa indication to both noninvasive and invasive assessment of ischemic CAD in HF patients (14). However, there are limited data available on how many patients with new-onset HF actually undergo an ischemic work-up and/or revascularization following an HF diagnosis, particularly in a contemporary real-world setting.

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Therefore, we sought to perform an analysis of a large commercial administrative claims database in order to assess the patterns of ischemic testing and revascularization for patients hospitalized with new-onset HF.

ABBREVIATIONS AND ACRONYMS

ACC = American College of Cardiology

AHA = American Heart Association

CABG = coronary artery bypass graft

CAD = coronary artery disease

CI = confidence interval

COPD = chronic obstructive pulmonary disease

HF = heart failure

HFrEF = heart failure with reduced ejection fraction

ICD-9-CM = International Classification of Diseases-Ninth Revision-Clinical Modification

OR = odds ratio

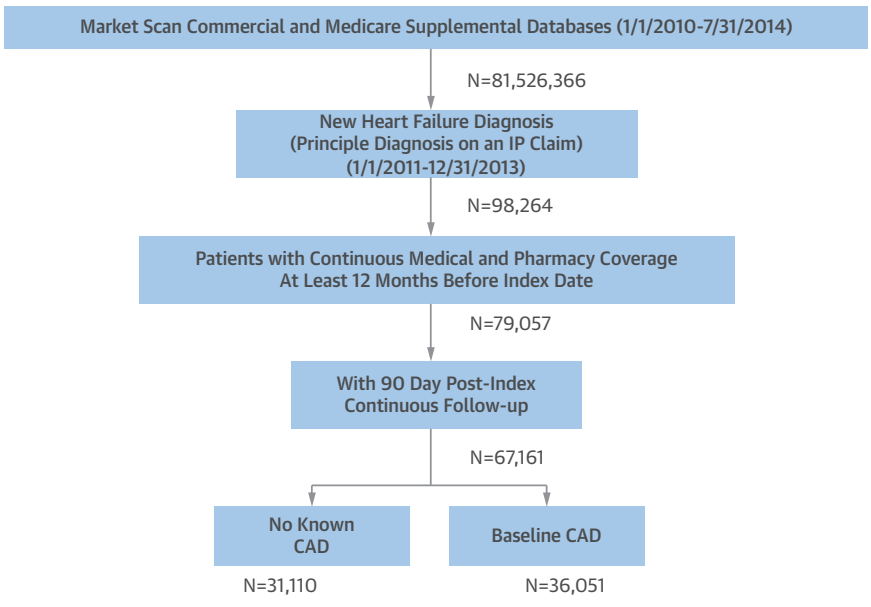
PAD = peripheral arterial disease

PCI = percutaneous coronary intervention

METHODS

Adult inpatients admitted with a principal diagnosis of HF between 2011 and 2013 were identified in the Truven Health MarketScan Commercial and Medicare

FIGURE 1 Patient Flow



From databases containing >81 million patient records, a total of 67,161 heart failure patients were included in this analysis. CAD = coronary artery disease; IP = inpatient.