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Predictors of Hospice Enrollment for Patients With Advanced Heart Failure and Effects on Health Care Use

Laura P. Gelfman, MD, MPH,[a,b] Yolanda Barrón, MS,[c] Stanley Moore, BS,[d] Christopher M. Murtaugh, PhD,[c] Anuradha Lala, MD,[e] Melissa D. Aldridge, PhD, MBA,[a,b] Nathan E. Goldstein, MD[a,b]

ABSTRACT

OBJECTIVES This study sought to: 1) identify the predictors of hospice enrollment for patients with heart failure (HF); and 2) determine the impact of hospice enrollment on health care use.

BACKGROUND Patients with HF rarely enroll in hospice. Little is known about how hospice affects this group's health care use.

METHODS Using a propensity score–matched sample of Medicare decedents with ≥2 HF discharges within 6 months, an Outcome and Assessment Information Set (OASIS) assessment, and subsequent death, we used Medicare administrative, claims, and patient assessment data to compare hospitalizations, intensive care unit stays, and emergency department visits for those beneficiaries who enrolled in hospice and those who did not.

RESULTS The propensity score–matched sample included 3,067 beneficiaries in each group with a mean age of 82 years; 53% were female, and 15% were Black, Asian, or Hispanic. For objective 1, there were no differences in the characteristics, symptom burden, or functional status between groups that were associated with hospice enrollment. For objective 2, in the 6 months after the second HF discharge, the hospice group had significantly fewer emergency department visits (2.64 vs. 2.82; $p = 0.04$), hospital days (3.90 vs. 4.67; $p < 0.001$), and intensive care unit stays (1.25 vs. 1.51; $p < 0.001$); they were less likely to die in the hospital (3% vs. 56%; $p < 0.001$), and they had longer median survival (80 days vs. 71 days; log-rank test $p = 0.004$).

CONCLUSIONS Beneficiaries' characteristics, including symptom burden and functional status, do not predict hospice enrollment. Those patients who enrolled in hospice used less health care, survived longer, and were less likely to die in the hospital. A tailored hospice model may be needed to increase enrollment and offer benefits to patients with HF. (J Am Coll Cardiol HF 2018;■:■–■) Published by Elsevier on behalf of the American College of Cardiology Foundation.

Heart failure (HF) is a leading cause of death in the United States, and the number of individuals who are older than 65 years of age with advanced HF continues to rise (1). The incidence of HF approaches 10 per 1,000 population after age 65 years (2). Among patients who were hospitalized with HF between 2005 and 2009, patients had a 5-year risk for cardiovascular and HF admission

From the [a]Brookdale Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai, New York, New York; [b]Geriatric Research Education and Clinical Center, James J. Peters VA Medical Center, Bronx, New York; [c]Center for Home Care Policy and Research, Visiting Nurse Service of New York, New York, New York; [d]Independent Contractor, Bonny Doon, California; and the [e]Divisions of Cardiology and Population Health Science and Policy, Icahn School of Medicine at Mount Sinai, New York, New York. Dr. Gelfman has received support from the National Institute on Aging (K23AG049930), The Mount Sinai Older Adults Independence Center (P30AG028741), and the National Palliative Care Research Center. The core dataset analyzed in this study was developed as part of a project supported by grant R01HS020257 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily reflect the official view of the Agency for Healthcare Research and Quality or the National Institute on Aging or the U.S. Department of Veterans Affairs. The dataset for the zip code crosswalk was obtained from The Dartmouth Atlas, which is funded by the Robert Wood Johnson Foundation and the Dartmouth Clinical and Translational Science Institute (UL1TR001086). All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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ABBREVIATIONS AND ACRONYMS

ADL = activity/activities of daily living

ED = emergency department

HF = heart failure

ICU = intensive care unit

NB = negative binominal

OASIS = Outcome and Assessment Information Set

SNF = skilled nursing facility

of 80.4% and a median survival of 2.1 years (3). Approximately 80% of patients hospitalized with HF are older than 65 years of age, and up to 44% of older patients with advanced HF are readmitted within 6 months after discharge (4,5). Furthermore, the clinical HF trajectory typically is a gradual functional decline with intermittent acute deteriorations, which often require hospitalization and can be life threatening (6). Patients with HF also face increased complexity as their disease worsens, with the concurrent use of expensive and invasive medical interventions, along with the ongoing possibility of advanced medical therapies such as mechanical circulatory support and cardiac transplantation; although these therapies may prolong life, they also create barriers to hospice enrollment and greater difficulty in predicting mortality, as compared with other end-stage illnesses, such as cancer (7,8). Nonetheless, these patients face a high mortality; in a population cohort study, 5-year survival for HF stage D was 20% (9). Finally, patients with HF have a poor quality of life with untreated dyspnea, pain, fatigue, and depression (10,11). As these statistics demonstrate, better models of care are needed for patients with advanced HF and their caregivers.

Hospice is a model of care that could address the needs of patients with advanced HF and their caregivers. Specifically, hospice is a health care model for patients with a limited prognosis that focuses on symptom management, care coordination, and caregiver support, with the goal of enabling individuals to remain at home at the end of life. Use of hospice has risen dramatically in the past 2 decades from 10% to almost 50% of decedents, and hospices are caring for more patients with a primary diagnosis of dementia, HF, and chronic obstructive pulmonary disease (12,13). Furthermore, the use of hospice is considered to be an indicator of high-quality end-of-life care (14), and many studies have demonstrated its benefits for patients and families (15-23). Not only is hospice a key home care model for seriously ill patients, but also it is cost saving to the Medicare program (24,25).

Although the use of hospice by patients with HF has almost doubled in the past decade (26,27), the proportion of HF decedents who use hospice remains lower than that of other major diseases. Cardiovascular professional societies have called for the increased and earlier integration of hospice care for patients with advanced heart disease (7). Little is known about the characteristics of patients with HF who use hospice versus those who do not, and whether or not hospice affects health care use by patients with HF at the end of life. In a sample of Medicare beneficiaries with advanced HF, we: 1) examined the predictors of hospice enrollment after the second HF hospitalization within 6 months; and then 2) compared outcomes of health care use and survival for those patients who subsequently enrolled in hospice and those who did not.

METHODS

STUDY GROUP. We conducted a secondary analysis of data from a longitudinal, observational study that examined patterns of care in a cohort of patients with HF by using Medicare claims and patient assessment data (28). This existing dataset, obtained by our collaborators from the Visiting Nurse Service of New York Center, used 2009 and 2010 Medicare administrative claims and home health patient assessment data to identify all HF hospitalizations with discharge to home health care between July 1, 2009, and June 30, 2010 (28). The International Classification of Diseases-9th Revision-Clinical Modification codes used by the federal Chronic Conditions Data Warehouse were used to identify patients admitted with a principal diagnosis of HF (28). HF hospitalizations assigned to a surgical Medicare Severity Diagnosis Related Group were excluded because wound care, rather than HF management, was likely the primary reason for home health care (28).

Because the occurrence of multiple HF hospitalizations has been established as a marker of increased HF severity and risk of death (29), we selected a subsample of individuals with 2 or more HF hospitalizations within a 6-month period (July 1, 2009, to December 31, 2009) to represent a cohort of patients with advanced HF. To obtain data about functional status and symptoms, only beneficiaries with an Outcome and Assessment Information Set (OASIS) assessment by a home care clinician within 7 days of the second HF discharge (July 1, 2009, to December 31, 2009) were included for analysis, using follow-up data in the subsequent year (2010). Finally, only those patients who died within 6 months of the second HF discharge were included in the study group (**Figure 1**).

SOURCES OF DATA. We constructed an analytic file of HF discharges of Medicare fee-for-service beneficiaries from 2009 to 2010 by linking data from the following Centers for Medicare & Medicaid Services administrative and claims files: 1) the Medicare Beneficiary Summary (Enrollment) file, which contains demographic and enrollment information about each beneficiary enrolled in Medicare; 2) the Medicare

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