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Reducing Heart Failure Readmissions by Teaching Patient-Centered Care to Internal Medicine Residents

Approximately 1 of every 5 Medicare patients is rehospitalized within 30 days of discharge, and heart failure (HF) is the most common reason for these readmissions.¹ Despite advances in the care of patients with HF, 30-day readmission rates have actually increased in recent years.²

We developed and implemented a patient-centered care curriculum for residents on the inpatient general medicine service that focuses on the importance of knowing patients as individuals to achieve safer transitions out of the hospital.³ We hypothesized that this curriculum would reduce 30-day rehospitalizations for patients with HF, since effective daily self-management plays an especially crucial role in avoiding the complications of this condition.

Methods. Patients were admitted for a principal diagnosis of congestive HF to the teaching general medicine ser-

vice at Johns Hopkins Bayview Medical Center between October 18, 2007, and August 31, 2009. In October 2007, the number of patients assigned to 1 of the 4 teaching service teams (each consisting of 1 faculty attending physician, 1 resident, 2 interns, and 2 basic medicine clerkship students) was reduced by half to provide trainees more time with their patients during and after hospitalization.³ The balance of patients were admitted to the hospitalist service. Patient assignment to the intervention vs a standard teaching team was based on a rotating call schedule. A patient-centered, transition-focused curriculum for this intervention team called for 3 components to be implemented for all patients: (1) a medication adherence assessment, (2) telephone call(s) to outpatient provider(s), and (3) a telephone call to each patient after discharge to assess the patient's experience of the care transition and his or her understanding of the hospital stay and plans for follow-up. Trainees were encouraged to consider how each patient's psychosocial circumstances affect medical care. In addition, the intervention team visited selected patients at home or in a nursing facility after discharge to better appreciate the patient's perspective of the transition in care.

Administrative records provided information on patient demographics, principal diagnosis, and 30-day readmissions. Team assignment was ascertained using an electronic database. The Social Security Death Index⁴ was used to identify patients who died within 30 days of discharge. This study was approved by the institutional review board at Johns Hopkins University School of Medicine.

A retrospective, quasi-experimental study design and time-to-event analysis was used to assess the primary outcome of death or readmission for HF within 30 days of hospital discharge. Kaplan-Meier survival curves were constructed to describe the probability of survival without readmission for HF during the 30-day follow-up period. The log-rank test for equality of survivor functions was used to compare survival curves. Statistical significance was set at $P \leq .05$.

Results. During the study period, HF was the principal diagnosis for 52 of 972 patients (5.3%) admitted to the intervention team and 323 of 5361 (6.0%) admitted to the 3 standard inpatient teaching teams. The mean age of patients admitted for HF to the standard teams was 71.5 years; 58% were women; and 72% were white and 26% black. There were no significant differences in these characteristics of the patients with HF admitted to the intervention team.

The rate of death or rehospitalization for HF within 30 days was 14% on the 3 standard teams (45 of 323 patients) and 4% on the intervention team (2 of 52 patients) ($P = .04$). The rate of death or rehospitalization for any diagnosis within 30 days was 32% on the standard teams (104 of 323) and 25% on the intervention team (13 of 52) ($P = .34$). The probability of survival 30 days without readmission for HF was higher for the intervention team ($P = .046$) (**Figure**). No patient admitted with a principal diagnosis of HF to the intervention team was readmitted for HF within 30 days of discharge for the last 17 months of the study period. Before implementation

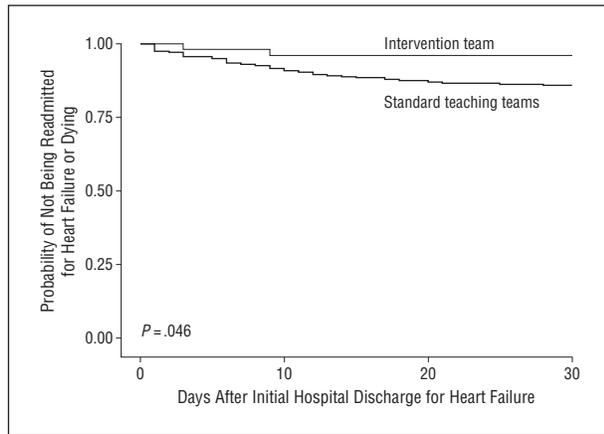


Figure. Kaplan-Meier plot for the probability of not being readmitted for heart failure or dying within 30 days of discharge.

of the curriculum, there was no difference in the rates of death or readmission for HF patients among the 4 teams (data not shown).

Comment. This study shows that teaching patient-centered, transition-focused care to internal medicine residents reduced readmissions for HF within 30 days of discharge for patients hospitalized for a principal diagnosis of HF. Only 4% of patients died or were readmitted for HF within 30 days on the intervention team compared with 14% of similar patients on standard teaching teams ($P = .04$).

The fact that a physician-led intervention reduced readmissions is noteworthy. Previous attempts to reduce readmissions for patients with HF have primarily involved nurses, pharmacists, or both.⁵ A key component of this intervention was a reduced number of admissions. The value of learning deeply from fewer patients has been previously emphasized,⁶ but evidence suggests that this alone is not sufficient to improve patient outcomes. A recent study⁷ showed that reducing residents' workload improved trainee satisfaction and increased time for educational activities but had no effect on patient outcomes, including 30-day readmissions. We believe that the effects of our intervention depended both on the additional time and on the experiences guided by this curriculum.

Several limitations of this study should be considered. First, the sample size was relatively small. Second, our study was conducted at a single institution, and information on readmissions to other hospitals was not available. Third, the electronic system used to identify each patient's team assignment relied on manual data entry and may not have uniformly identified patients transferred to a different subspecialty team or intensive care unit. Finally, this was not a randomized controlled study, and unmeasured features of the intervention team may have influenced the observed findings.

In conclusion, teaching patient-centered care to internal medicine residents reduced 30-day HF readmissions for patients admitted for HF. This type of educational intervention may reduce readmissions for HF and possibly for other chronic medical conditions for

which patients' behaviors play a central role in disease management.

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