CLINICAL

Caregiver Presence and Patient Completion of a Transitional Care Intervention

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ood communication among hospital providers, patients, and aftercare clinicians at hospital discharge is associated with better health outcomes and lower costs.¹⁻⁴ Family caregivers' efforts can enhance patient engagement⁵⁻¹⁰; yet formal involvement of family caregivers in post hospital communications has been historically underemphasized. For these and other reasons, quality improvement agencies promote inclusion of family caregivers in the inpatient clinician patient partnership.^{11,12}

Improving communication and patient engagement in transitional care is essential because poor comprehension of discharge instructions increases the risk for medical rehospitalization. ¹³⁻¹⁷ Results from illness-specific post hospital interventions, such as stroke, suggest it is feasible and desirable to include family caregivers in transitional programs. ¹⁸ However, literature regarding hospital aftercare coaching that includes or is delivered directly to family caregivers is sparse. ¹⁹ Information about the feasibility and possible associations of including family caregivers is necessary because better post hospital transitional care is being promoted as a national directive by Affordable Care Act–funded initiatives. ^{20,21}

Systematically including family caregivers in health services is receiving increased attention.²² Investigations suggest that the involvement of a family caregiver affects the choice for a post hospital discharge disposition²³ and improves patient-reported success after hospital discharge.²⁴ While one study suggests that social support may increase the likelihood of hospital readmission for stroke, 25 a systematic review of transitional care interventions following stroke or myocardial infarction reports evidence of moderate benefit for patients.²⁶ Addressing education materials to both the patient and the family has been reported as one feature of a high-quality discharge plan.²⁷ These few reports of family caregiver involvement in acute and post hospital services are consistent with studies showing that practical support from a family caregiver increases outpatient adherence to medication, 28,29 which is important because poor outpatient adher-

ABSTRACT

Objectives

To evaluate the association between family caregiver presence and patient completion of the Care Transitions Intervention (CTI), a patient activation model that provides transitional care coaching for 30 days following hospital discharge.

Study Design

A convenience sample of 2747 fee-for-service Medicare patients recruited for the CTI during inpatient medical hospitalizations at 6 hospitals in Rhode Island between January 1, 2009 and June 31, 2011.

Methods

As part of an effectiveness trial of the CTI, Transitions Coaches recruited patients prior to hospital discharge. When a family caregiver was present during recruitment, the patient and family caregiver were coached together or the family caregiver was coached independently.

Results

We hypothesized that CTI participation would be equivalent for the 2265 coached patients without a family caregiver present at recruitment, versus the 482 patients with a family caregiver. After adjusting for significant covariates, patients with family caregivers were more than 5 times as likely to complete the intervention as patients without family caregivers (AOR = 5.48; 95% CI = 4.22-7.12). Men with family caregivers were nearly 8 times as likely to complete the intervention as men without family caregivers (AOR = 7.94; 95% CI = 5.26-11.98).

Conclusions

The inclusion of a family caregiver is associated with a greater rate of completing the CTI for post discharge coaching, particularly among men; the inclusion of a family caregiver is a feasible modification to the CTI program.

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Take-Away Points

Caregivers' presence during patient recruitment is associated with a greater rate of completion of a post hospital transitional care coaching intervention, particularly among men.

- Caregivers' presence during patient recruitment is associated with a 5 times greater rate of completion of the Care Transitions Intervention, a post hospital coaching intervention.
- Men with caregivers were nearly 8 times as likely to complete the transitional care intervention as men without caregivers.
- These findings are particularly timely and important in light of the proliferation of the Care Transitions Intervention and other transitional care programs that has occurred as a result of the Affordable Care Act.

ence can lead to unplanned hospitalization.³⁰ In summary, it is likely that family caregiver involvement enhances clinician-patient communication.³¹

The Care Transitions Intervention (CTI),³² a patient activation program, provides coaching following hospitalization to improve patient self-management. The CTI has proved effective in a randomized, controlled trial¹ and in a quality improvement intervention implemented in Rhode Island.³³ The Rhode Island implementation reduced the odds of 30-day hospital readmission by 39% for coached individuals compared with individuals who were not offered the intervention. In pooled analyses where Rhode Island was one of 14 intervention communities, quality improvement initiatives targeting care transitions was associated with geographic reduction in Medicare beneficiaries' all-cause 30-day hospital readmission rate.³⁴

The objective of the current study was to assess whether the presence of a family caregiver during recruitment is associated with any difference in CTI effectiveness. We hypothesized that intervention completion rates would be similar when the patient was recruited alone versus with a family caregiver present.

METHODS

The CTI is an intervention designed to empower individuals to organize and manage their health concerns and to communicate effectively with aftercare clinicians following hospital discharge. A detailed description of the CTI has been published elsewhere. A Transitions Coach is the program's core resource for patients. The coach meets with the patient shortly before hospital discharge, introduces the CTI program, and requests permission for a home coaching visit. Those consenting to the intervention receive a face-to-face in-home visit within 3 days of hospital discharge, followed by 2 telephone calls within 30 days of discharge.

Recruitment and Eligibility

From January 1 through December 31, 2009, Transitions Coaches approached individuals with specific admission diagnoses of pulmonary disease, heart failure, or myocardial infarction. In January 2010, eligibility expanded to include all patients admitted to the general medicine services of the 6 hospitals. Exclusion criteria included diagnoses of cognitive impairment (eg, dementia, delirium), hospital admission directly from a long-term

care facility or plan for discharge to a long-term facility, and involvement of hospice services. A family caregiver was operationally defined as a non-patient adult at the patient's bedside. When such a family caregiver was present, he or she was included in the in-hospital consent conversation about coaching, and the patient and family caregiver were coached together. If the patient appeared to have possible mild cognitive impairment or did not speak English or Spanish, and the family caregiver did speak one of these languages, the Transitions Coach interacted primarily with the family caregiver. We did not collect data about the family caregiver, such as relationship to the patient, gender, age, or health status.

Outcomes

Our primary research objective was to learn what, if any, association exists between the presence of a family caregiver at recruitment (in the target population) and intervention completion. The main outcome was completion of the intervention after discharge, as defined by participation in, at minimum, the post hospital home visit. We also examined between-group differences in intervention consent and 30-day all-cause hospital readmission.

Data Sources and Analyses

The analyses relied on Medicare claims and enrollment data plus a coaching database maintained by the investigators to track the intervention. Medicare enrollment data contributed information regarding age, race, and gender. Race was included as a study variable because race has been associated with intervention participation and access to care.³⁵⁻³⁷ Medicare claims data contributed information on admission diagnosis, medical comorbidity, length of stay for the index hospitalization, and any readmissions within 30 days. The coaching database included demographic and study variables, such as information regarding the patient's acceptance or refusal of the

■ Table 1. Patient Characteristics, by Presence of a Caregiver

	Target F	Target Population	
Characteristic	Patients With Caregiver (N = 482) [N (%)]	Patients Without Caregiver (N = 2265) [N (%)]	P
Age (years)			
<65	38 (7.9)	356 (15.7)	<.001
65-74	93 (19.3)	543 (24.0)	
75-84	158 (32.8)	703 (31.0)	
>84	193 (40.0)	666 (29.4)	
Race			
White	432 (89.6)	2053 (90.6)	.002
Black	16 (3.3)	128 (5.7)	
Other	32 (6.6)	84 (3.7)	
Gender			
Male	224 (46.5)	848 (37.4)	.002
Female	258 (53.5)	1420 (62.7)	
Dual-eligible Medicare/Medicaid	76 (15.8)	478 (21.1)	.008
30-day hospital readmissions ^a	75 (21.4)	321 (19.3)	.37
Number of comorbidities, mean (SD)	1.8 (1.5)	1.7 (1.5)	.46
Length of stay (days), mean (SD)	6.7 (4.2)	6.8 (4.9)	.82
Consent to coaching	332 (68.9)	1208 (53.3)	<.001
Receipt of a home visit	216 (44.8)	357 (15.8)	<.001

^aIndex hospital claims data to determine readmission rates are available for 2018 patients: 351 with caregivers present at recruitment and 1667 without caregivers.

intervention, completion of the intervention (ie, participation in a home visit following discharge), and whether a caregiver was present during the in-hospital recruitment discussion about participating in the intervention. The outcome of 30-day hospital readmission was calculated using claims data and defined as hospitalization at any acute care hospital within 31 days of discharge from the index hospitalization.

We categorized participants into 2 groups based on the presence or absence of a family caregiver during recruitment. We assessed between-group differences by χ^2 test for categorical variables and t test for continuous variables for age, gender, race, illness variables, and outcomes. Significant factors identified during these bivariate analyses were used as covariates in a logistic regression model to determine the relative strength of the presence of a family caregiver in predicting readmission rate, consent for study participation, and completion of the intervention, and to mitigate confounding between the 2 groups.

Analyses were completed using SAS version 9.2 (Cary, North Carolina).

RESULTS

Among the total 2747 individuals targeted as eligible to participate in the CTI coaching intervention, those with a family caregiver present at recruitment (N = 482) were significantly more likely to be in one of the older age groups and to be male versus female, and they were less likely to be white than another race or dually eligible for Medicare and Medicaid (Table 1).

Among the total target population (N = 2747), 56% (N = 1540) consented to participation in the CTI. When compared with patients without a family caregiver present for the in-hospital discussion, patients with a family caregiver had significantly higher consent rates to the intervention (68.9% of patient-caregiver dyads compared with 53.3% of patients alone; P < .0001) and completion of the intervention (44.8% of patient-caregiver dyads compared with 15.8% of patients alone; P < .0001). There were no group differences regarding 30-day readmissions. After adjustment for potential confounders, patients with a caregiver present at enrollment were twice as likely to consent to participate compared with patients without a

■ Table 2. Unadjusted and Adjusted Odds Ratios of Completing the Care Transitions Intervention, Controlling for **Group Differences**

Characteristic	Unadjusted OR (95% CI)	Adjusted OR (95% CI) ^a
Caregiver Status		
No Caregiver	1 (Ref)	1 (Ref)
Caregiver	4.35 (3.52-5.37)	5.48 (4.22-7.12)
Age (years)		
<65	1 (Ref)	1 (Ref)
65-74	1.44 (1.05-1.98)	1.5 (1.02-2.21)
75-84	1.28 (0.94-1.73)	0.99 (0.68-1.46)
>84	1.11 (0.81-1.51)	0.75 (0.51-1.10)
Race		
White	1 (Ref)	1 (Ref)
Black	1.46 (0.99-2.14)	1.46 (0.88-2.40)
Other	1.31 (0.85-2.02)	0.96 (0.49-1.87)
Gender		
Male	1 (Ref)	1 (Ref)
Female	1.3 (1.07-1.57)	1.5 (1.18-1.91)
Length of Stay (days)	0.94 (0.91-0.97)	0.93 (0.89-0.96)

alncluded in the final model: age, race, sex, length of stay, caregiver status

family caregiver (adjusted odds ratio [AOR] = 2.11; 95% CI, 1.63-2.71).

Among the population of consenting participants (N =1540), 37% (N = 573) received the post hospital home visit. After adjustment for significant covariates, patients with family caregivers present during enrollment were more than 5 times as likely as patients without family caregivers to complete the intervention (AOR = 5.48; 95% CI, 4.22-7.12), as shown in Table 2. Men with family caregivers present during enrollment were nearly 8 times as likely to complete the intervention as men without family caregivers (AOR = 7.94; 95% CI, 5.26-11.98). To control for potential differences at the hospital level, we conducted a conditional logistic regression with hospital as the strata; results were similar (total sample AOR = 5.92; 95% CI, 4.53-7.74; and men AOR = 8.36; 95% CI, 5.47-12.76).

DISCUSSION

We found the presence of a family caregiver at the time of the initial contact with the patient to be associated with higher likelihood of completion of a patient activation intervention to reduce 30-day readmissions. These results bolster others' recommendations to involve caregivers in clinical quality improvement of the post hospital transition.

The involvement of family caregivers in the Rhode Island effectiveness trial of the CTI was by convenience. Since the CTI was designed for delivery to patients, we made no attempts to target family caregivers or to recruit participants during a time when a family caregiver was present; in other words, family caregivers were not targeted, but were included if present during intervention consent. This resulted in 17.5% of the participants having a caregiver present at enrollment. It is likely that many participants in the "patients without family caregivers" group were, in fact, aided by a family caregiver, because it has been reported that 38% of older adults attend routine primary care outpatients visits with a family caregiver³⁸ and 85% of patients discharged "home to selfcare" receive help from friends or family.³⁹ Therefore, our results suggest that including family caregivers, when present, is associated with greater patient participation; and because our study reached a small percentage of family caregivers, future studies should seek to include caregivers who may not be readily available in the hospital but do shoulder responsibilities regarding transitional care and at home.

It is interesting to note the 8-fold increase in intervention completion for men with a caregiver. In recent studies, male sex has been reported to be an independent risk factor for medical hospitalization⁴⁰; the current results are consistent with and add to this finding, and suggest that caregiver involvement may be of benefit for all patients, and especially for male patients.

The primary limitation of this study is that unmeasured confounding variables may contribute to the results. Because the CTI efficacy and effectiveness trials were designed to be delivered directly to patients, relatively little caregiver information was captured, yet many caregiver factors are relevant. For instance, the family caregiver's relationship to the patient, age, and other demographic information would help to characterize the general benefits of including any family caregiver compared with differential effects of including a particular family member. Also, the percentage of individuals in the "without caregiver" group who did have access to a family caregiver is not known. Similarly, no information is available regarding characteristics that may relate to family caregiver effectiveness, such as a family caregiver's perceived self-efficacy as a caregiver, or the experience of strain or burden. Given this design, it is possible that this study's subgroup of patients with a bedside caregiver varies significantly from the group without a caregiver. This issue, combined with our study's low rate of caregiver involvement, suggest that there is likely significant unmeasured heterogeneity regarding family caregiving efforts in both cohorts of this investigation; this should be noted when considering the study findings, and future investigations should include systematic procedures for including family caregivers and assessing potentially relevant variables. Another limitation of the study is that individuals with dementia were excluded; so, extending our findings to that population, in which caregiver presence or absence is highly relevant, is an extrapolation.

CONCLUSIONS

Family caregivers were more frequently present during recruitment for the intervention for patients who were in the older age group and less frequently present for white patients or patients who were dually eligible for Medicare and Medicaid. The presence of a family caregiver at recruitment was associated with a higher rate of patient acceptance to participate in the intervention and a higher rate of completion of (at minimum) a face-to-face in-home follow-up visit. These results suggest that including caregivers in recruitment for hospital aftercare coaching and/ or including caregivers at the time of coaching may be associated with increased patient agreement to participate in the intervention and may be a feasible way to increase overall patient participation in the hospital and after discharge. When including family members of hospitalized patients in clinical quality improvement or research, it is important to note reports that caregivers experience stress and other symptoms^{41,42}; steps should be taken to assess caregiver strain concurrently while partnering with caregivers to improve patient care. Additional research is needed to assess the benefits of formally including family caregivers in post hospital coaching interventions.

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