Patient Outcomes After 30, 60, and 90 Days Post-Discharge in a Community-Wide, Multi-Payer Care Transitions Intervention (CTI) Program

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Research Objectives

Evidence suggests that patient transitions from hospital to home are suboptimal resulting in ineffective care and costly readmissions. Strengthening the transition from hospital to home is an important component of improving the patient's experience of care and reducing cost.

The Care Transitions Intervention (CTI) has demonstrated efficacy in reducing hospital readmission rates in chronically ill older adults but little data are available on whether and to what extent there is benefit beyond 30 days, and for populations other than Medicare beneficiaries.

The objective of this community-wide Quality Improvement (QI) project was to explore the impact of CTI on a diverse population's hospital admission rates at 30, 60, and 90 days post index discharge.

Study Design

A prospective cohort design was employed to link and analyze data gathered by CTI coaches and insurer-based claims. Data were collected on patient demographics- exposure to CTI and hospital utilization post-discharge at 30, 60 and 90 days.

Patients were categorized into one of three groups based on their exposure to CTI:

- **Completed CTI**
Completed at least 1 home visit and 3 other encounters with the coach

- **Partial completer**
Completed at least 1 home visit

- **Non-completer**
Did not complete a home visit. This group included patients who declined or were lost to follow-up prior to the completion of a home visit

Descriptive statistics were calculated to summarize available sociodemographic and clinical characteristics. Odds ratios were calculated for 30- 60- and 90 day hospital admissions using exposure to the CTI program as the primary independent variable and adjusted for other covariates (age and insurance type) found to be associated with rehospitalization.

Care Transitions Intervention
Patients who enrolled in the CTI program were offered a home visit shortly after discharge and three weekly follow-up telephone calls. The staff who served as CTI coaches were nurses, educators or social workers and completed the CTI coach training program.

During the CTI interactions the four pillars of the program were reinforced:

- Medication self-management
- Development of a patient-centered health record
- Follow-up with care team soon after discharge
- Knowledge of red flag/symptoms

Population Studied

699 patients were approached in the Emergency Department, Observation unit or inpatient service to participate in CTI between October 2010 and April 2011.

Patients were insured by non-HMO government programs, Medicare Advantage and commercial payers. Eligible patients were enrolled with an active diagnosis that included CHF, CAD, Pneumonia, COPD, Diabetes or UTI. Other patients who could potentially benefit from CTI were considered on a case by case basis.

Principal findings

Figure 1 Patient enrollment and analysis flow diagram

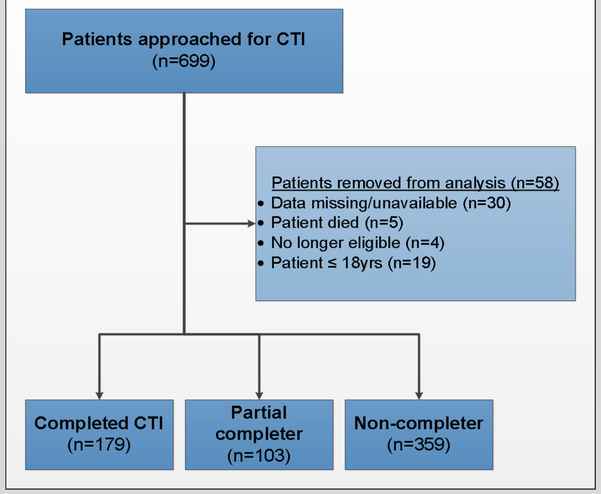


Table 1 Demographic and clinical characteristics of patients

	Completed CTI (n=179)	Partial completer (n=103)	Non-completer (n=359)
Age*			
Mean years (sd)	68.30 (13.28)	66.13 (14.56)	70.97 (14.93)
Range in years	22-96	21-99	21-99
Payer type			
Commercial	55 (30.7%)	35 (34.0%)	98 (24.7%)
Medicare Advantage	112 (62.6%)	62 (60.2%)	241 (67.3%)
Medicaid FFS	11 (06.1%)	6 (05.8%)	19 (05.3%)
Other	1 (00.6%)	0 (00.0%)	0 (00.0%)

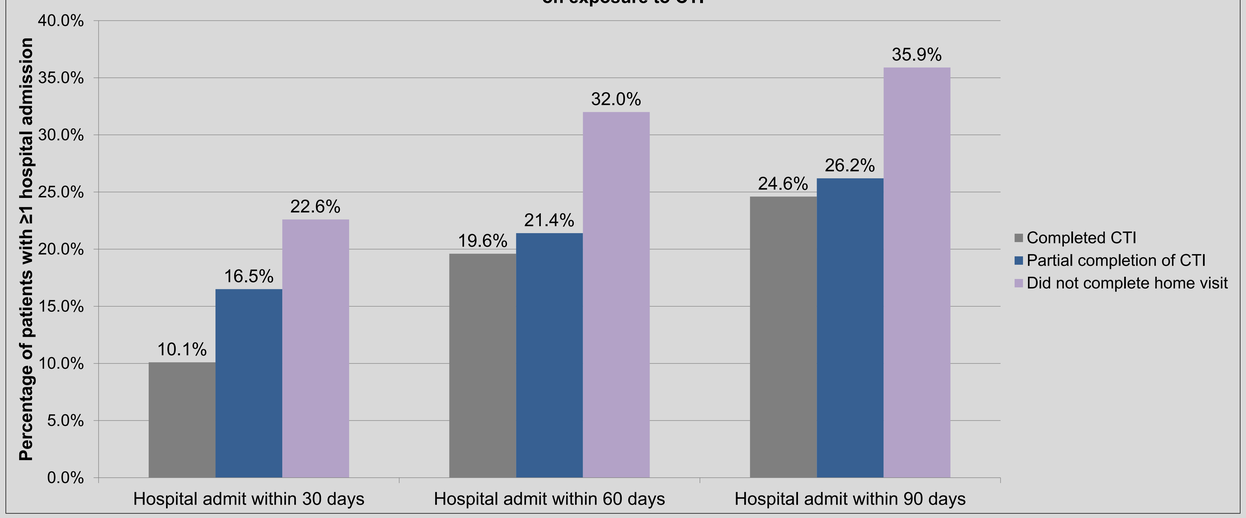
To test statistical significance, χ^2 was used for categorical variables and ANOVA was used for continuous variables. * Significant at P<.05.

Table 2 Results from Multivariate Logistic Regression analysis for 30, 60, 90 day hospital utilization

	30-Day (n=639)	60-Day (n=639)	90- Day (n=639)
Exposure to CTI			
Non-completer	1.0 (Reference)	1.0 (Reference)	1.0 (Reference)
Partial completer	0.69 (0.39-1.25)	0.60 (0.35-1.01)	0.67 (0.41,1.11)
Completed CTI	0.39 (0.22-0.67)*	0.52 (0.34-0.81)*	0.60 (0.40-0.90)*
Age			
Age	1.00 (0.98, 1.02)	1.00 (0.98, 1.02)	1.01 (0.99,1.03)
Payer type			
Commercial	1.0 (Reference)	1.0 (Reference)	1.0 (Reference)
Medicare Advantage	2.04 (1.03-4.03)*	1.97 (1.10- 3.54)*	2.08 (1.19-3.65)*
Medicaid FFS	2.17 (0.87-5.44)	2.39 (1.07- 5.32)*	2.19 (0.99-4.82)

** Significant at P<.05, Regression model adjusted for exposure to CTI, age and payer type.*

Figure 2 Unadjusted rate (%) of participants with ≥ 1 hospital admission post-discharge comparing patients based on exposure to CTI



Principal findings

699 patients were approached to participate in CTI and 641 patients were included in the analysis. Of these patients, 179 (27.9%) completed the entire CTI program, 103 (16.1%) were partial completers and 359 (56.0%) were non-completers.

Participants who did not complete CTI differed in age from those who were partial completers or completed the intervention. There were no differences between the groups based on payer type.

Participants who completed the CTI program had lower admission rates at 30,60 and 90 days post-discharge when compared to non-completers.

After controlling for age and payer type, participants who completed CTI were significantly less likely to be admitted at 30, 60, and 90 days post-discharge when compared to non-completers. The odds of hospitalization at 30, 60, and 90 days was not significantly reduced for partial completers compared to non-completers.

Conclusion

While the impact of completing the CTI program is most notable during the 30 day post-discharge period, the effect continues to be present after 60 and 90 days post-discharge.

The results suggest that the intervention is most effective in patients who complete the CTI full program.

The QI methodology used is susceptible to biases regarding patient selection and other factors which may have influenced results.

- Convenience sample
  - The population enrolled may have different characteristics than the general population limiting generalizability (e.g. less ill, lengthier hospitalization, available during business hours) which may limit the generalizability of our findings.
- Availability of data
  - Our ability to track patient deaths was limited. Including patients who may have died could contribute to an underestimate of the hospitalization rate. This may have had a greater impact on the results from non-completer group.
  - Data for key demographics including gender and race/ethnicity were unavailable preventing us from adjusting our analysis for factors found to impact readmission rates.

Implications for policy-delivery or practice

The effectiveness of CTI extends beyond the controlled environment of a Randomized Clinical Trial, demonstrating a lasting impact on admission rates at 30, 60 and 90 days for a heterogeneous patient population. CTI appears to be a reasonable addition to a multi-faceted intervention to reduce preventable readmissions in patients with chronic diseases.

Further research to identify patient characteristics that may be associated with achieving the goals of CTI would be beneficial as the program is extended to more diverse populations.

Acknowledgements

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