A retrospective analysis of the impact of post-discharge phone calls by hospitalists on patient satisfaction and readmission rates

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BACKGROUND

- Patient satisfaction scores and readmission rates are important measures to incentivize high-quality inpatient hospital care.
- Post-discharge phone call interventions have the potential to improve continuity of care and reduce readmission risk as patients transition from an inpatient setting to home with home care.
- Discharging hospitalists at our institution initiated this intervention to evaluate the quality of transitional care by examining Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores and 30-day readmission rates.

OBJECTIVES

- Assess the impact of post-discharge phone calls from discharging hospitalists on patients' satisfaction scores including overall hospital care and physician communications.
- Analyze the impact of the intervention on patients' post-discharge readmissions within 30 days and adherence to follow-up appointments.

METHODS

Setting & Design

- 167-bed hospital in Fridley, Minnesota
- **Two patient groups:** 1) phone call intervention and 2) no phone call
- Retrospective data were collected from 2015 – 2016:
  - Patients' electronic health records
  - Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient experience survey
- Hospitalists called patients within 7 days of discharge
- **Inclusion criteria:** consenting adults ≥ 18 years old, non-psychiatric conditions, completed calls
- **Exclusion criteria:** discharge to skilled nursing facilities, missing information

Data Collection

- **Patients' demographics and health characteristics:** age, gender, race/ethnicity, marital status, patient's spoken language, insurance coverage, inpatient length of stay (LOS), All Patients Refined (APR) Severity of Illness, and APR Risk of Mortality (3M Health Information Systems, St. Paul, MN)
- **Intervention group:** demographics were collected during a physician-initiated post-discharge phone call

Measures

- **Patients' responses to HCAHPS questions:** 1) During this hospital stay, how often did physicians: 1) Treat you with courtesy and respect? 2) Listen carefully to you? 3) Explain things in a way you could understand? 4) Global rating of hospital: (0 = worst to 10 = best)
- **HCAHPS satisfaction scores:** Top-box responses = global rating of 9 or 10 or "Always" for relevant HCAHPS questions vs. other responses

Outcomes

1. Readmission within 30 days
2. HCAHPS satisfaction scores for the overall hospital rating
3. Physicians' communications

Statistical Analysis

- **Continuous variables:** Wilcoxon rank-sum tests
- **Categorical variables:** Pearson χ^2 tests
- Potential confounding risk factors were identified by practical implication and model selection
- **Three multivariate logistic regression models:**
  - To quantify the odds of having the primary outcomes as a function of phone call intervention while adjusting for the identified factors
- Interaction terms adjusted for effect modification by confounding factors
- Model performance was evaluated using a goodness-of-fit statistic
- Used Stata 14.2 MP (StataCorp, College Station, TX)

RESULTS

- 4,490 patients were discharged by hospitalists
- 1,067 (23.76%) received post-discharge phone calls from a hospitalist
- Older patients with severe disease were more likely to receive a phone call
- Overall readmission rate was 16.35%
- Overall satisfaction with hospital stay was 68.91%
- Satisfaction with physician rate was 63.47%
- Descriptive characteristics of patients who were called vs. not called are shown (Table 1)
- A post-discharge phone call intervention by a hospitalist was statistically associated with the patient's HCAHPS global hospital rating, AOR 1.52, p = 0.04 and rating of physician communication, AOR: 1.56, p = 0.021, (Table 2)
- The intervention's impact on improving patients' HCAHPS hospital rating (p = 0.001) and physician communications (p = 0.101) varied by age at first admission, (Table 2)
- For a length of stay > 4 days, the predictive model suggests a positive impact of post-discharge phone calls on readmissions (Figure 1)
- Response rates to the HCAHPS survey questions were higher for patients who had a completed phone call
- Calls for younger age groups had a higher odds ratio of giving top-box HCAHPS scores than older age groups (Figure 2)
- The number of patients needed to treat/call was 7 to have a positive impact on HCAHPS scores for the hospital and for physician communications

LIMITATIONS

- Low survey response rate
- Patients who received phone call attempts were more severely ill which led to higher readmission rates
- The main effect of phone call attempts was not conclusively determined

CONCLUSIONS

- The post-hospital phone call program was significantly associated with a 15% increase in odds of receiving top box HCAHPS scores, which was age-related.
- The phone call intervention changed the direction of the association between length of stay and readmission.
- The underlying reasons for this change are the basis for future studies.

Table 1. Descriptive characteristics of the sample stratified by phone call.

Characteristic	No Call	Call	p-value
N	3423	1067	
Age at encounter, median (IQR)	59 (45, 74)	65 (52, 78)	<0.001
Female, n (%)	1840 (53.8%)	589 (55.2%)	0.41
Race, n (%)			
White	2893 (84.5%)	959 (89.9%)	<0.001
African American	306 (8.9%)	65 (6.1%)	
Asian	109 (3.2%)	28 (2.6%)	
Other	115 (3.4%)	15 (1.4%)	
Married*, #, n (%)	1342 (39.3%)	518 (48.6%)	<0.001
Length of Stay, median (IQR)	2.46 (1.56, 3.68)	2.6 (1.65, 3.8)	0.018
Risk of Mortality, n (%)			
Minor	1412 (41.3%)	374 (35.1%)	<0.001
Moderate	1083 (31.7%)	336 (31.5%)	
Major	722 (21.1%)	283 (26.6%)	
Extreme	200 (5.9%)	72 (6.8%)	
HCAHPS Hospital Rating, n (%)			
Responded	600 (17.5%)	307 (28.8%)	<0.001
HCAHPS MD Communication, n (%)			
Responded	606 (17.7%)	311 (29.1%)	<0.001

Note: **including significant others, living partner; # some information is missing in the dataset;* ***Abbreviations:*** *IQR, interquartile range; CC, Complication or Comorbidity; MCC, Major Complication or Comorbidity*

Table 2. Summary of three multivariate logistic regression models for readmission, HCAHPS hospital rating and HCAHPS physician communications.

Variable	AOR	p-value
Phone Call	1.23	0.152
Married	0.78	0.004
White	1.30	0.042
Length of Stay (LOS)	1.04	0.009
Phone Call x LOS	0.94	0.087
Medically Complex	1.26	0.009
Phone Call	1.52	0.04
Major/Extreme SOI	0.76	0.061
Married	1.17	0.291
White	0.32	0.011
Private	0.90	0.593
Age*	1.02	0.01
Age x Phone Call	0.97	0.001
Phone Call	1.56	0.021
Major/Extreme SOI	0.77	0.076
Married	1.34	0.038
White	0.47	0.044
Private	1.20	0.34
Age*	1.01	0.116
Age x Phone Call	0.98	0.101

Age: mean age of the study population to account for multicollinearity between the interaction effect and phone call effect.*

Figure 1. Predicted readmission rate with and without a completed phone call.

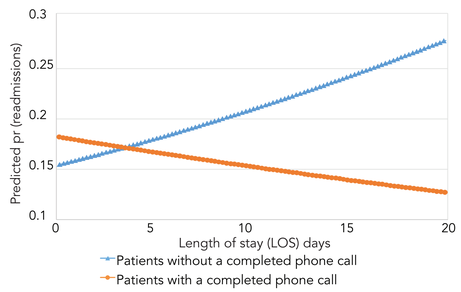
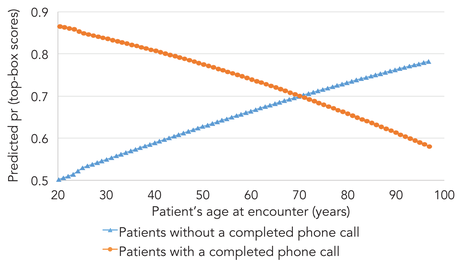


Figure 2. Patients' predicted top-box scores with and without post-discharge phone calls for HCAHPS global hospital rating.



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