

## BRIEF REPORTS

## Perceptions of Readmitted Patients on the Transition From Hospital to Home

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**BACKGROUND:** Hospital leaders have had mixed success reducing readmissions. Little is known about the readmitted patient's perspective.

**METHODS:** A cross-sectional 36-item survey was administered to 1084 readmitted inpatients of The Hospital of the University of Pennsylvania (an urban academic medical center) and Penn Presbyterian Medical Center (an urban community hospital) between November 10, 2010 and July 5, 2011. The survey response rate was 32.9%.

**RESULTS:** The most commonly reported issues contributing to readmission were: 1) feeling unprepared for discharge (11.8%); 2) difficulty performing activities of daily living (ADLs) (10.6%); 3) trouble adhering to discharge medications (5.7%); 4) difficulty accessing discharge medications (5.0%); and 5) lack of social support (4.7%). Low-socioeconomic

status (SES) (defined as uninsured or Medicaid) patients were more likely than high-SES patients to report difficulty understanding (odds ratio [OR] 2.7; 95% confidence interval [CI] 1.1, 6.6) and executing (OR 2.2; 95% CI 1.1, 4.4) discharge instructions, difficulty adhering to medications (OR 1.8; 95% CI 1.2, 3.0), lack of social support (OR 2.0; 95% CI 1.2, 3.6), lack of basic resources (OR 2.6; 95% CI 1.1, 6.1), and substance abuse (OR 6.7; 95% CI 2.3, 19.2).

**CONCLUSIONS:** Patients reported transition challenges which they believe contribute to illness relapse and readmission. Interventions designed to address these challenges, and tailored for patient characteristics such as SES, may better address the root causes of readmission. *Journal of Hospital Medicine* 2012;7:709–712. © 2012 Society of Hospital Medicine

Over 14% of all patients hospitalized in the United States are readmitted within 30 days of discharge.<sup>1</sup> Numerous studies have used administrative data in order to identify clinical and operational predictors of readmission. However, few studies have explored patients' perspectives on readmission.<sup>2–7</sup> As a result, we know little about potentially modifiable challenges which patients face during the transition from hospital to home. Lack of understanding of the patient perspective has hampered the ability of hospitals to create interventions which address these underlying causes of readmissions.

Patients with low socioeconomic status (SES) are up to 43% more likely to require readmission than their higher-SES counterparts,<sup>8,9</sup> and qualitative data has described unique challenges faced by low-SES patients during transition.<sup>2</sup> Our objectives were to understand the transition experiences of readmitted patients and

to compare these experiences across SES and diagnostic categories.

### METHODS

#### Development of a Survey Instrument

A collaborative team of physicians, nurses, and social workers used a previously defined conceptual framework,<sup>10</sup> literature search, and expert interviews to construct a 36-item survey that addressed the following domains: preparedness for prior discharge; delays in care-seeking; medication adherence; follow-up with a primary care provider (PCP); and overarching challenges faced during transition which contributed to readmission. Each question had multiple answer choices including "Other" which allowed patients to provide open-ended answers; patients could select all answer choices that applied. Prior to administration, the survey was pretested with 15 random patients and revised to improve reliability and comprehensibility. (See Supporting Information, Survey Script Versions 1.0 and 2.0, in the online version of this article.)

#### Sampling Strategy and Patient Enrollment

Patients were eligible to participate if they: 1) had capacity to complete an interview; and 2) were readmitted within 30 days of a prior discharge from the Hospital of the University of Pennsylvania (HUP), a 695-bed academic medical center, or Penn Presbyterian

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**TABLE 1.** Characteristics of Surveyed Patients vs. Non-surveyed

Characteristics of Patients	Survey Sample (n = 1084)	Not in Survey Sample (n = 2797)	P Value*
Age mean (SD)	55.7 (16.6)	58.0 (18.2)	<0.01
Gender, n (%)			0.88
Male	546 (50.4%)	1428 (51.1%)	
Race, n (%)			0.96
Black	502 (46.4%)	1146 (41.3%)	
White	504 (46.6%)	1362 (49.1%)	
Principal discharge diagnosis,† n (%)			0.98
Medical			
Acute on chronic systolic heart failure	44 (4.6%)	23 (1.3%)	
Acute renal failure	24 (2.5%)	29 (1.7%)	
Surgical			
Postoperative infection	48 (14.8%)	53 (5.2%)	
Digestive system problems	17 (5.2%)	23 (2.2%)	
APR-DRG score, n (%)			0.13
0 (Not assigned)	9 (0.7%)	28 (1.0%)	
1 (Minor)	113 (10.1%)	628 (22.7%)	
2 (Moderate)	338 (31.4%)	881 (31.8%)	
3 (Major)	470 (43.7%)	883 (31.9%)	
4 (Extreme)	154 (14.3%)	369 (13.3%)	
Length of stay mean (SD)	6.2 (6.9)	6.5 (10.1)	0.33
Insurance payer, n (%)			0.77
Uninsured/Medicaid	234 (21.6%)	489 (17.5%)	
Medicaid + Medicare	85 (7.84%)	172 (6.2%)	
Medicare	345 (31.8%)	878 (31.5%)	
Private	420 (38.8%)	1253 (44.9%)	
No. of 60-d readmissions mean (SD)	1.3 (0.02)	2.0 (0.02)	<0.01

Abbreviations: APR-DRG, All Patient Refined-Diagnosis Related Groups; SD, standard deviation. \*t test for continuous variables and  $\chi^2$  for categorical variables. †International Classification of Diseases, Ninth Revision (ICD-9) codes for conditions listed within medical and surgical groups are as follows: acute on chronic systolic heart failure (428.23), acute renal failure (584.9), postoperative infection (998.59), digestive system problems (997.4)

Medical Center (PPMC), a 317-bed affiliated community hospital. Both hospitals are located in Philadelphia and serve a population which is 45.4% privately insured, 33.5% insured by Medicare, and 21.2% uninsured or insured by Medicaid. We excluded readmissions that were planned or from another facility because these were less sensitive to patient domains such as adherence, access, and social support.

Eligible participants were identified by survey administrators (bedside nurses, social workers, or clinical resource managers) on the day of hospital readmission. Because data were being used immediately for quality improvement, the Institutional Review Board (IRB) waived the need for consent. Administrators typically took 10 minutes to conduct the survey in-person and record responses directly into patients' electronic medical record (EMR). Inpatient care teams could view responses in real time and work to resolve identified challenges prior to patients' discharge.

Between November 10, 2010 and July 5, 2011, 3881 patients were readmitted to study hospitals. Five hundred eighty-four readmissions were ineligible for the study because they lacked capacity, were planned readmissions, or were readmitted from another facility. This left 3297 eligible individuals. We surveyed

1084 individuals yielding a response rate of 32.9%<sup>11</sup>; the remainder either refused the survey, or were not approached for the survey due to time restraints of administrators. Characteristics of responders and non-responders are displayed in Table 1, and were similar in all measured categories with the exception of age (58.0 vs 55.7,  $P < 0.01$ ) and the number of 60-day readmissions (2.0 vs 1.3,  $P < 0.01$ ).

### Statistical Analysis

Survey responses were extracted from the EMR and linked with patient clinical and demographic data. Variables pertaining to hospitalization, such as admitting service and principal diagnosis, were associated with patients' index hospitalization rather than the readmission. A trained research assistant extracted open-ended free-text answers to any survey questions marked, "Other" and coded them using a grounded theory approach.<sup>12</sup>

In our primary analysis, we described challenges reported by readmitted patients. In a secondary analysis, we tested for differences in transition challenges by SES using lack of insurance or Medicaid as a proxy for low SES. Using insurance status as a marker for material aspects of SES is well-described in health services research.<sup>13-16</sup> In addition, income data from our institution demonstrated that 86.5% of uninsured and Medicaid patients have a median household income below \$15,000. We tested for differences by diagnostic category using the index admitting service (medical vs surgical) as a proxy for diagnostic category (Table 2).

We compared continuous variables using the two-sample *t* test and categorical variables using Pearson's chi-square test. The Cuzick nonparametric test was used to test for trends across ordered groups. We used multivariable logistic regression models to estimate the association between each binary transition challenge outcome and predictors: SES and diagnostic group. These models were adjusted for potential confounders: age, gender, length of stay, and severity of illness, as determined by All Patient Refined-Diagnosis

**TABLE 2.** Multivariable Logistic Regression Models of Transition Challenges

	Low vs High SES (ref) OR (95% CI)	Medical vs Surgical (ref) OR (95% CI)
Unprepared for DC	1.3 (0.9, 1.9)	1.0 (0.7, 1.6)
Understanding DC instructions	2.7 (1.1, 6.6)	1.7 (0.5, 5.8)
Executing DC instructions	2.2 (1.1, 4.4)	1.6 (0.6, 3.7)
Activities of daily living	1.0 (0.6, 1.5)	1.1 (0.7, 1.7)
Medication access	1.6 (0.9, 2.8)	2.3 (1.0, 4.9)
Medication adherence	1.8 (1.2, 3.0)	2.6 (1.2, 5.4)
Lack of social support	2.0 (1.2, 3.6)	2.3 (1.0, 5.2)
Lack of food, transportation, telephone	2.6 (1.1, 6.1)	7.1 (0.9, 53.2)
Substance abuse	6.7 (2.3, 19.2)	1.5 (0.4, 5.2)

Abbreviations: CI, confidence interval; DC, discharge; OR, odds ratio; ref, reference; SES, socioeconomic status.

Related Groups (APR-DRGs). We did not adjust for race because it was strongly correlated with SES in our dataset ( $P < 0.0001$ ). Confounders were included in final models if their association with outcomes had a  $P$  value less than 0.10. Analyses were performed using the STATA software package, version 11.0 (StataCorp LP, College Station, TX). The survey was approved by the University of Pennsylvania IRB.

## RESULTS

### Patient Characteristics

We surveyed 1084 unique individuals; 50.4% of participants were male, 46.4% were black. The most common index principal diagnosis in the medical group was systolic heart failure (4.6%), while the most common index principal diagnosis in the surgical group was postoperative infection (14.8%) (Table 1).

### Discharge Preparedness, Medication Adherence, and PCP Follow-up

At the time of prior discharge, 86.4% of respondents felt that they had been prepared for self-care. 80.3% reported being able to take all discharge medications as prescribed. The most common reasons for not being able to take medications included: 1) side effects or worry about side effects (13.1%); 2) trouble paying for medications (10.7%); and 3) lack of transportation to the pharmacy (8.4%). Since their prior discharge, 52.9% of participants reported that they had visited a PCP; 28.7% of participants report being referred by their PCP to the emergency room for readmission.

### Transition Challenges in Overall Survey Sample

During the transition from hospital to home, 45.5% of readmitted patients reported experiencing challenges which contributed to readmission. The most commonly reported issues contributing to readmission were: 1) feeling unprepared for discharge (11.8%); 2) difficulty performing activities of daily living (ADLs) (10.6%); 3) trouble adhering to discharge medications (5.7%); 4) difficulty accessing discharge medications (5.0%); and 5) lack of social support (4.7%).

### Transition Challenges by Subgroup

Low-SES patients were more likely than high-SES patients to report difficulty understanding (odds ratio [OR] 2.7; 95% confidence interval [CI] 1.1, 6.6) and executing (OR 2.2; 95% CI 1.1, 4.4) discharge instructions, difficulty adhering to medications (OR 1.8; 95% CI 1.2, 3.0), lack of social support (OR 2.0; 95% CI 1.2, 3.6), lack of basic resources (OR 2.6; 95% CI 1.1, 6.1), and substance abuse (OR 6.7; 95% CI 2.3, 19.2) as perceived reasons for readmission. Of the patients who described "Other" issues contributing to readmission, low-SES patients most commonly described stress or depression (49.0%), while high-SES patients most commonly reported a recurrence of symptoms (74.8%). Medical and surgical patients had

similar odds of facing each transition challenge with one exception: medical patients were more likely to report difficulty adhering to medications (OR 2.6; 95% CI 1.2, 5.4).

## DISCUSSION

Several findings from this study are of interest to practicing hospitalists or hospital administrators. First, of the issues to which patients most commonly attributed readmission, lack of discharge preparedness is the only one which occurs during index hospitalization; in order to address most transition challenges, hospitals must think beyond their walls. By penalizing hospitals for excess rates of readmission, The Hospital Readmission Reduction Program (HRRP) will effectively hold hospitals accountable for addressing issues which occur in patients' homes and communities.<sup>17</sup> Hospitals that have robust partnerships with community pharmacies, social service agencies, and PCPs may have the most influence on these issues and the most success in reducing readmissions. Second, consistent with other literature describing increased rates of readmission with enhanced PCP follow-up,<sup>18</sup> our findings demonstrate that PCPs often refer their patients to the emergency room for readmission. This suggests that PCP follow-up, while perhaps essential for patient care, may not necessarily reduce readmissions and may actually facilitate readmission. Third, this study describes underlying reasons for patient nonadherence with discharge medications: side effects, cost, and transportation. Targeted interventions to improve adherence may include floor-based pharmacists who counsel on side effects, determine co-pays prior to discharge, and encourage patients to fill prescriptions from the hospital pharmacy to avoid transportation barriers.

Finally, and perhaps most importantly, these data suggest that one transition experience does not fit all. Patients with low SES appear to have a distinct and challenging transition experience. Currently, there is an emphasis on tailoring transition interventions to specific disease populations, such as patients with congestive heart failure. Our study suggests that it may be more effective to tailor interventions for low-SES patients across diagnostic category, helping these patients gain access to outpatient medical resources and address competing issues, such as food insecurity or substance abuse.

Our study has several limitations. First, the low survey response rate makes it susceptible to nonresponse bias. Second, survey administration by a member of the care team may have increased social desirability bias. Third, because it was important to the study team to incorporate our survey into hospital workflow, survey responses were recorded directly into the EMR which limited administrators to recording a "yes" response for each answer choice which the participant endorsed. Therefore, in our dataset, we are unable to distinguish a definite "no" from a missing response; however, the survey was short, making it

unlikely that questions were skipped. Fourth, closed-ended questions may have failed to capture the range of participant responses, although the inclusion of an open-ended answer choice ameliorates this issue. Finally, we are unable to draw conclusions regarding association of survey responses with the risk of readmission, because this study was administered only to readmitted patients.

## CONCLUSIONS

This report of patients' perspectives challenges many commonly held assumptions regarding readmission. Readmission reflects not only the quality of hospital care, but a variety of factors in patients' homes and communities. PCP follow-up, while perhaps critical for patient care, may not be a panacea for reducing hospital readmissions. Targeted medication counseling focused on side effects, co-pay, and medication delivery may address patients' underlying reasons for nonadherence. And most importantly, one transition experience does not fit all. Hospitalists and administrators must tailor interventions to address challenges reported by their patients, particularly those of low SES.

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