

The Relationship Between Hospital Interdepartmental Transfers and Patient Experience

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Abstract

This study examined the association between interdepartmental transfers and the perceptions of care received by adult patients who were admitted and discharged from a 300-bed, not-for-profit community tertiary hospital in the Midwest. Transfers of patient care are daily and frequent hospital processes. However, limited attention has focused on the effect that intrahospital transfers of care have on the patient experience. Understanding this relationship is important, since value-based purchasing models directly tie patient experience measures into hospital reimbursements. The key finding of this study indicates that as patients' transfers increase, their perceptions of care decrease. Therefore, by reducing the frequency of interdepartmental transfers, patient satisfaction may increase. This research provides clinicians and administrators a better understanding of the relationship between a frequent and a daily hospital process (ie, interdepartmental transfers) and its influence on patients' perceptions of their experience.

Keywords

transitions of care, HCAHPS, patient expectations, patient satisfaction

Introduction

Driven by the Patient Protection and Affordable Care Act's (2010) value-based purchasing (VBP) program, hospitals have allocated resources to redesign inpatient processes and procedures to improve the patient experience. One common inpatient process that has not received appropriate attention as to possible effects on the patient's experience is interdepartmental transfers. For example, patients are admitted to the hospital through the emergency department (ED), surgical area, or as a direct admission. After admission, the patient may require transfers to various departments for diagnostic work (ie, radiology), procedures (eg, gastrointestinal laboratory, cardiac catheterization laboratory, surgery), or from one nursing unit to another. Previous research has reported that a typical nursing unit may transfer or discharge 40% to 70% of its patients on a daily basis (1). Problems may arise when the responsibility for patient care is shifted from one team of health-care professionals to another during interdepartmental transfers, and this may impact the patient's experience. For example, potential delays in care, hospital-acquired conditions, medication

errors, patient falls, and misinterpretation of patient needs or other types of communication breakdowns may influence the patient experience (2).

Previous literature has focused on patient experience and the VBP model as well as performance improvement efforts (3). Other studies have examined adverse events that result from transfer/handoff problems during shift changes, and a few have focused on adverse events that arise from patient transfers between hospital units (4,5) However, there is a gap in the research literature regarding the evaluation of routine inpatient processes for delivering care from the patient's perception. Understanding this relationship is important since VBP models directly tie patient experience measures into hospital reimbursements (6,7).

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Therefore, the aim of this study was to examine whether hospital interdepartmental transfers are associated with patient experience. More specifically, we explored whether the number of interdepartmental transfers affected patient experience as measured by responses to the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey questions. Results of this study can inform both clinicians and administrators on how typical hospital processes, such as transfers, may affect the quality of the patient experience.

Conceptual Framework

Being a hospital inpatient has been referred to as “one of the most disempowering situations one can experience in modern society” (8). For many patients, hospitals are unfamiliar, isolating places filled with anxiety and unanswered questions but where they expect to be treated with kindness, respect, and dignity. These types of expectations are integral components in patients’ determining levels of service satisfaction or dissatisfaction. While patient expectations can be described as the anticipation that given events are likely to occur during, or as an outcome of, health care (9), patient experiences represent direct, personal observations of health-care visits or hospital stays. Thus, what people expect to receive from their health care, compared to their observations of what they actually received in practice (“experiences”), influence patients’ evaluations of their care (“satisfaction”) (9). Therefore, all components of care delivery, such as clinical care, the culture of care teams, operations of the organization as well as the behaviors of every person in the organization who interacts with the patient, influence patients’ experiences (10).

The common pathways and sources of hospital admissions are through the ED, surgical services, interhospital transfers, or direct admissions from a physician’s office or clinic. Upon admission, patients are initially assigned to a nursing unit based on the needed level of care for their condition and often their diagnostic category. Thereafter, if the patient’s condition changes, transfers may occur between general medical/surgical, step-down units, and intensive care units.

A transfer is defined as any type of movement of the patient off the unit to which they were originally assigned. It is estimated that patients may move 3 to 6 times during their inpatient stay (1). Care transfers are complex tasks due to the severity of the patient’s condition (ie, deteriorating or improving), time limitations, number of people involved, and the logistics of the transfer itself (11). Transfers require high levels of health professionals’ collaboration and effective communication during the transition of care to assist patients in feeling and being safe. However, communication errors during these care transitions or “handoffs” are a leading cause of sentinel events (12). A hand-off is defined as a transfer and acceptance of patient care responsibility achieved through effective communication (12). Handoffs

occur within and across clinical settings and disciplinary boundaries whether on units at shift changes, when patients transfer between units, or when patients are moved to or from other departments for tests or procedures (11). Handoffs, therefore, are critical clinical and organizational processes that occur at all levels of a hospital, starting from an individual level (e.g., between nurses during shift reports) to an organizational level (e.g., between units during patient transfers). Researchers have highlighted that poor “handoffs often end in patient harm” (13). As noted in the literature “substandard or variable handoffs have contributed to errors, such as, care omissions, treatment delays, and inefficiencies from repeated work, inappropriate treatment, and adverse events with minor or major harm, increased lengths of stay, avoidable readmissions, and increased costs” (11, p158).

Considering that interdepartmental patient care transfers are daily processes within hospitals, further examination is warranted to determine whether these routine and frequent occurrences influence the patient’s perception of care. We hypothesized that patients having a larger number of interdepartmental transfers would have lower patient experience scores as measured by responses to the HCAHPS survey questions.

Methods

Data

The study focused on a not-for-profit, community tertiary hospital located in the US Midwest region. The 300-bed hospital had approximately 12,000 discharges within the study’s time frame. Researchers obtained institutional review board approval from the required institutions for this study.

The data for this study were obtained from 2 sources. The first data source consisted of HCAHPS survey data of patients with an inpatient stay from December 1, 2013, to November 30, 2015, based on the following inclusion: adult patients (18 years of age or older) with a nonpsychiatric primary discharge diagnosis for medical or surgical care, who had an overnight stay (or longer) as an inpatient, and who were alive at discharge. The hospital received 4278 individual patient encounter surveys resulting in a 35% response rate. The second data set was constructed from the hospital’s electronic medical records system that provided the location and time of the individual patient’s admission, transfer, discharge, and the payor/insurance source. There were 5122 interdepartmental transfers associated with the 4278 individual patient encounter surveys. The 2 data sources were merged based on a patient identifier.

Variables

Table 1 illustrates the measurements and frequencies of the descriptive variables used in this research study. The dependent variables included the following HCAHPS measures: 3 composite measures (communication with nurses,

Table 1. Descriptive for Dependent, Independent, and Control Variables (Measurements and Frequencies).

Dependent Variables		Measure	N	%
Domain	Variable			
Nurse communication	Treat with courtesy and respect	0 = Other	565	13.3
		1 = Always	3670	86.7
	Listen carefully	0 = Other	1014	24.1
		1 = Always	3200	75.9
Physician communication	Explain in way understand	0 = Other	1072	25.6
		1 = Always	3116	74.4
	Treat with courtesy and respect	0 = Other	540	12.9
		1 = Always	3658	87.1
Staff responsiveness	Listen carefully	0 = Other	897	21.5
		1 = Always	3276	78.5
	Explain in way understand	0 = Other	1096	26.3
		1 = Always	3075	73.7
Environment	Call button	0 = Other	1508	39.5
		1 = Always	2309	60.5
	Bathroom or bedpan	0 = Other	833	30.6
		1 = Always	1885	69.4
Overall rating	Cleanliness	0 = Other	1079	26.1
		1 = Always	3063	73.9
	Quietness	0 = Other	1676	40.4
		1 = Always	2469	59.6
Overall recommend	Rating of hospital	0 = Other	1188	27.8
		1 = Best (9 and 10)	3090	72.2
	Recommend hospital	0 = Other	2774	66.7
		1 = Definitely yes	1384	33.3
Independent variable	Number of interdepartmental transfers	0 = No transfer	1175	32.4
		1 = Once	1394	38.5
		2 = Twice	633	17.5
		3 = Three or more	421	11.6
Overall health status	Rate overall personal health	0 = Other	2392	66.0
		1 = Excellent	1231	34.0
Highest level of education	Education level	0 = Other	1812	50.0
		1 = High school/higher	1811	50.0
Race/ethnicity	Race/ethnicity	0 = Other	3186	87.9
		1 = Non-Hispanic White	437	12.1
Age	Age	0 = Other	1047	28.9
Gender	Gender	1 = 60-higher	2576	71.1
		0 = Other	1714	47.3
Insurance	Insurance	1 = Female	1909	52.7
		0 = Other	1932	53.3
Discharge unit/department	Higher level of care	1 = Medicare	1691	46.7
		0 = Other	2255	62.2
		1 = Adult critical care, step-down, cardiac, telemetry	1368	37.8
		0 = Other	1496	41.3
Admission source	Admission source	1 = Emergency	2127	58.7
		0 = Other	1496	41.3

communication with doctors, and staff experience), 2 individual items (quietness of the hospital environment and cleanliness of the hospital environment), and 2 global items (recommendation of hospital to friends and family and overall rating of hospital). Response options for all items, except the hospital recommendation and rating, included *always*, *usually*, *sometimes*, and *never*. For this study, the dependent variable was binary and recoded as 1 = *always*. All other responses (*never*, *sometimes*, and *usually*) were recoded as 0. Response options for willingness to recommend to friend and family were *definitely no*, *probably no*, *probably yes*, and *definitely yes*. This dependent variable was binary and recoded as 1 = *definitely yes*. All other responses (*definitely no*, *probably no*, and *probably yes*) were recoded as 0. Response options for overall rating of the hospital were any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible. The dependent variable was binary and recoded as 1 = 9 and 10. All other responses were recoded as 0. This approach is consistent with the top-box approach, or most positive response, used in CMS' public reporting of HCAHPS data.

For this study, the main independent variable of interest was the number of interdepartmental transfers experienced by each patient during their hospital stay. Based on an analysis of the distribution of the variable, we used 4 categories: 0 = (the reference category) no transfers; 1 = one transfer; 2 = two transfers; and 3 = three or more transfers.

Case-mix indicators were analyzed as categorical variables. These variables included age, gender, level of education, overall health status, race/ethnicity, and insurance type (Table 1) (14). In addition, the discharge unit was classified as higher level care (adult critical care, step-down intensive care, and the cardiac telemetry units) or general level of care (orthopedic, medical, surgical, and observation units). Finally, the source of admission (emergency, surgical, or direct admission) was a control variable.

Analysis

Multivariate logistic regression was utilized to assess the association between the number of interdepartmental transfers and the likelihood of most positive patients' HCAHPS survey scores while controlling for the case-mix indicators. Results were interpreted as odds ratios, and the Hosmer-Lemeshow test was used to assess model goodness of fit (15). SPSS Version 23 was used for data management and analyses.

Results

The 12 hypotheses of this study related to the patients' perception of their experience as determined by HCAHPS scores and the number of interdepartmental transfers occurring during a patient's hospitalization. The HCAHPS domains examined included Care from Nurses (H1-H3), Care from Doctors (H4-H6), Experience with Call Button

Table 2. Summary of Hypotheses Findings.

Domain/Global Question	Variable	Supported/Not Supported	# Transfers	OR/CI/P value
Nurse communication	Explain in way understand	Partially supported	1	OR = 0.931, 95% CI: 0.768-1.130
			2	OR = 1.002, 95% CI: 0.806-1.246
			3 or more	OR = 0.77, 95% CI: 0.607-0.977, $P < .05$
	Listen carefully	Partially supported	1	OR = 1.102, 95% CI: 0.904-1.342
			2	OR = 1.034, 95% CI: 0.828-1.291
			3 or more	OR = 0.785, 95% CI: 0.617-0.998, $P < .05$
	Treat with courtesy and respect	Marginally supported	1	OR = 1.168, 95% CI: 0.909-1.500
			2	OR = 0.946, 95% CI: 0.720-1.244
			3 or more	OR = 0.754, 95% CI: 0.563-1.011, $P < .10$
Physician communication	Explain in way understand	Not supported	1	OR = 1.044, 95% CI: 0.862-1.265
			2	OR = 1.048, 95% CI: 0.846-1.299
			3 or more	OR = 0.907, 95% CI: 0.714-1.152
	Listen carefully	Not supported	1	OR = 1.052, 95% CI: 0.858-1.289
			2	OR = 1.27, 95% CI: 1.003-1.607, $P < .05$
			3 or more	OR = 0.847, 95% CI: 0.661-1.086
	Treat with courtesy and respect	Not supported	1	OR = 1.178, 95% CI: 0.920-1.509
			2	OR = 1.35, 95% CI: 1.011-1.802, $P < 0.05$
			3 or more	OR = 0.976, 95% CI: 0.722-1.320
Staff experience	Call button	Partially supported	1	OR = 1.119, 95% CI: 0.933-1.343
			2	OR = 1.032, 95% CI: 0.842-1.264
			3 or more	OR = 0.725, 95% CI: 0.577-0.911, $P < .01$
	Bathroom/bedpan	Not supported	1	OR = 1.052, 95% CI: 0.830-1.335
			2	OR = 0.935, 95% CI: 0.721-1.212
			3 or more	OR = 0.836, 95% CI: 0.633-1.104
Environment	Quietness	Partially supported	1	OR = 1.038, 95% CI: 0.871-1.236
			2	OR = 0.878, 95% CI: 0.723-1.067
			3 or more	OR = 0.644, 95% CI: 0.516-0.804, $P < .01$
	Cleanliness	Not supported	1	OR = 1.236, 95% CI: 1.017-1.502, $P < .05$
			2	OR = 1.011, 95% CI: 0.817-1.252
			3 or more	OR = 0.975, 95% CI: 0.766-1.242
Overall recommend	Recommend hospital	Partially supported	1	OR = 1.017, 95% CI: 0.850-1.216
			2	OR = 0.84, 95% CI: 0.685-1.029, $P < .10$
			3 or more	OR = 0.917, 95% CI: 0.728-1.155
Overall rating	Rating of hospital	Not supported	1	OR = 1.198, 95% CI: 0.993-1.446, $P < .10$
			2	OR = 1.194, 95% CI: 0.965-1.477
			3 or more	OR = 0.881, 95% CI: 0.699-1.111

Abbreviations: CI, confidence interval; OR, odds ratio.

(H7), Experience with Bathroom and Bedpan (H8), Quietness (H9), Cleanliness (H10), Willingness to Recommend (H11), and Overall Rating of Hospital (H12). Results from the multivariate analysis and summary of the study's hypotheses findings are reported in Table 2.

Nursing-Related (H1-H3) and Staff Experience (H7-H8) Hypotheses

Hypothesis 1 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often nurses explained things in a way they could understand as *always*. Our results showed that the odds of an *always* was 23% lower if a patient transferred 3 times or more ($P < .05$).

Hypothesis 2 stated that as the number of transfers increased during a patient's hospital stay, the patient would

be less likely to rate how often nurses listened carefully to them as *always*. The results revealed that the odds of an *always* was 21% lower if a patient transferred 3 times or more ($P < .05$).

Hypothesis 3 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often nurses treated them with courtesy and respect as *always*. Results showed that the odds of an *always* rating was 25% lower if a patient transferred 3 times or more; however, these results were marginally statistically significant ($P < .10$).

Hypothesis 7 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate after they pressed the call button, how often they got help as soon as they wanted it as *always*. The results revealed that the odds of an *always* was 27% lower if a patient transferred 3 times or more ($P < .01$).

Hypothesis 8 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often they got help in getting to the bathroom or in using the bedpan as soon as they wanted as *always*. In this study, there were no significant differences observed among patients who experienced any number of transfers during their hospitalization, compared to those who did not transfer. The results of this study supported Hypotheses 1 to 3 and 7 but not 8.

Physician-Related Hypotheses (H4 to H6)

Hypothesis 4 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often doctors explained things in a way they could understand as *always*. In this study, there appeared to be no significant relationship between an *always* rating and transfers.

Hypothesis 5 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often doctors listened carefully to them as *always*. The logistic regression revealed that the odds of an *always* rating were 1.3 greater if a patient transferred twice ($P < .05$).

Hypothesis 6 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often doctors treated them with courtesy and respect as *always*. The results revealed that the odds of an *always* rating were 1.4 times greater if a patient transferred twice ($P < .05$). The results of this study did not support Hypotheses 4 to 6.

Environment: Quiet at Night and Cleanliness Hypotheses (H9 to H10)

Hypothesis 9 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often the area around his or her room was quiet at night as *always*. Results showed that the odds of an *always* was 36% lower if a patient transferred 3 times or more ($P < .001$).

Hypothesis 10 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to rate how often his or her room and bathroom was kept clean as *always*. The results revealed that the odds of an *always* was 1.3 times greater if a patient transferred once ($P < .001$). The results of this study supported Hypotheses 9 but did not support Hypotheses 10.

Likelihood of Recommending the Hospital (H11)

Hypothesis 11 stated that as the number of transfers increased during a patient's hospital stay, the patient would be less likely to recommend the hospital to his or her friends and family as *definitely yes*. The results showed that the odds of a *definitely yes* was 16% lower if a patient transferred twice, but the relationship was marginally significant

($P < .10$). Therefore, the sample data partially supported Hypothesis 11.

Likelihood of Giving a Top Box Overall Rating (H12)

Hypothesis 12 stated that patients who were transferred more times during their hospital stay would be less likely to give overall rating as *9s and 10s*. The results revealed that the odds of a *9 and 10* were 1.2 times more likely if a patient transferred once but only marginally significant ($P < .10$). Therefore, the sample data did not support Hypothesis 12.

Limitations

There are several limitations to this study. The first is that the data and analysis were limited to a single hospital. While the sample size was adequate, the results may not be generalizable to other hospitals. Other limitations of this study were that hospital-acquired conditions were not accounted for during the inpatient stay nor was the level of complexity involved during handoffs and transitions of care. Both of these factors could have influenced the patient experience.

Discussion

Our study examined the association of interdepartmental transfer frequency and patients' perceptions of care. The key finding of this study indicates that as patients' transfers increase, their perceptions of care decreases, particularly for nursing care, environment, and hospital recommendation. Therefore, by reducing the frequency of interdepartmental transfers, patient satisfaction may increase.

Our findings concerning the nursing-related, hospital environment, and hospital recommendation hypotheses, reflect that nurses and their interactions with patients are central to shaping and improving the patient's experience. Nurse communication is integral to patients' perceptions of their overall care. This study supports previous research, which reported that during the hospital experience, nursing care had the most significant positive impact on patient perceptions (16).

The lack of support for the physician-related hypotheses is not surprising considering that unlike the patients moving to different nursing care areas, physicians, whether the attending physician or hospitalist, usually follow the patients throughout their hospital stay remaining the primary point of contact for the patient and family. Therefore, it is understandable that patient perceptions of communication with doctors was either not related or positively related to patient transfers throughout the organization. In the study hospital, hospitalists work a 7-day on, 7-day off shift, further enhancing over time the consistency of contact between the physician and the patient.

Conclusion

This research provides clinicians and administrators a better understanding of the relationship between a frequent and

daily hospital process (ie, interdepartmental transfers) and its influence on patients' perceptions of their experience. Although this study was limited to a single organization, it serves as a foundation for other research opportunities. For example, are patients who are transferred more than once during their hospitalization more likely to be readmitted within 30 days? What if any effect does increase in patient transfer frequency have on a hospital's operating margin? Both of these questions, readmission (ie, quality) and costs, have been previously noted in the literature, but more research is needed to assess whether through process improvement initiatives transfers can be minimized or possibly avoided, resulting in improved quality and the patient experience while reducing costs (4,17–21). How does the number of interdepartmental transfers affect nurse staffing and productivity? Are the frequency of transfers on a unit considered when making nurse staffing decisions? Measuring nursing workload that incorporates meeting multiple demands—direct patient care, support care, and organizational continues to be a challenge (22). For example, interdepartmental transfers involve clinical and organizational components with both contributing to increase workloads of nurses. Excessive workloads could have significant negative effects on the nursing workforce, the hospital, and patient safety such as disengagement of nurses from the profession, higher organizational costs for recruiting and retaining nurses, and potential medical errors. Given these factors, future research should focus on expanding how routine inpatient processes for delivering care, such as interdepartmental transfer frequency impacts the industry's goal of achieving the Triple Aim of cost, quality, and access to care.

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