

# Assessment of Patient Education Delivered at Time of Hospital Discharge

Shreya P. Trivedi, MD; Sara Corderman, MD; Elyse Berlinberg, BS; Antoinette Schoenthaler, EdD; Leora I. Horwitz, MD, MHS

**IMPORTANCE** Patient education at time of hospital discharge is critical for smooth transitions of care; however, empirical data regarding discharge communication are limited.

**OBJECTIVE** To describe whether key communication domains (medication changes, follow-up appointments, disease self-management, red flags, question solicitation, and teach-back) were addressed at the bedside on the day of hospital discharge, by whom, and for how long.

**DESIGN, SETTING, AND PARTICIPANTS** This quality improvement study was conducted from September 2018 through October 2019 at inpatient medicine floors in 2 urban, tertiary-care teaching hospitals and purposefully sampled patients designated as "discharge before noon." Data analysis was performed from September 2018 to May 2020.

**EXPOSURES** A trained bedside observer documented all content and duration of staff communication with a single enrolled patient from 7 AM until discharge.

**MAIN OUTCOMES AND MEASURES** Presence of the key communication domains, role of team members, and amount of time spent at the bedside.

**RESULTS** Discharge days for 33 patients were observed. Patients had a mean (SD) age of 63 (18) years; 14 (42%) identified as White, 15 (45%) were female, and 6 (18%) had a preferred language of Spanish. Thirty patients were discharged with at least 1 medication change. Of these patients, 8 (27%) received no verbal instruction on the change, while 16 of 30 (53%) were informed but not told the purpose of the changes. About half of the patients (15 of 31, 48%) were not told the reason for follow-up appointments, and 18 of 33 (55%) were not given instructions on posthospital disease self-management. Most patients (27 of 33, 81%) did not receive guidance on red-flag signs. While over half of the patients (19 of 33, 58%) were asked if they had any questions, only 1 patient was asked to teach back his understanding of the discharge plan. Median (IQR) total time spent with patients on the day of discharge by interns, senior residents, attending physicians, and nurses was 4.0 (0.75-6.0), 1.0 (0-2.0), 3.0 (0.5-7.0), and 22.5 (15.5-30.0) minutes, respectively. Most of the time was spent discussing logistics rather than discharge education.

**CONCLUSIONS AND RELEVANCE** In this quality improvement study, patients infrequently received discharge education in key communication domains, potentially leaving gaps in patient knowledge. Interventions to improve the hospital discharge process should address the content, method of delivery, and transparency among team members regarding patient education.

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[+ Invited Commentary](#)

[+ Supplemental content](#)

**Author Affiliations:** Department of Medicine, Beth Israel Deaconess Medical Center, Boston, Massachusetts (Trivedi); Carl J. Shapiro Institute for Education and Research, Boston, Massachusetts (Trivedi); Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland (Corderman); NYU Grossman School of Medicine, New York University, New York, New York (Berlinberg); Institute for Excellence in Health Equity, Center for Healthful Behavior Change, Department of Population Health, NYU Langone Health, New York, New York (Schoenthaler); Department of Population Health, NYU Grossman School of Medicine, New York, New York (Horwitz).

**Corresponding Author:** Shreya P. Trivedi, MD, Department of Medicine, Beth Israel Deaconess Medical Center, 330 Brookline Ave, Boston, MA 02215 ([strivedi@bidmc.harvard.edu](mailto:strivedi@bidmc.harvard.edu)).

The day of discharge is a vulnerable time for patients as they transition to the outpatient setting. Prior studies have demonstrated that suboptimal communication contributes to inadequate understanding of postdischarge care plans, leading to preventable harms such as medication errors, adverse events, and costly readmissions.<sup>1-10</sup>

Several survey and qualitative interview studies have highlighted a lack of clarity among team members about who is responsible for providing what content during the discharge communication process.<sup>2,11-16</sup> However, there are limited empirical data from direct observation of the actual discharge process. Observing communication in real time from the patient perspective allows us to shed light on the quality and content of discharge education and the current roles of each team member in preparing the patient for the next care setting.

The primary aim of this direct-observation quality improvement study was to examine all patient-practitioner interactions, particularly the presence and extent of key discharge communication domains as a way of identifying potential areas for improvement. Ultimately, an accurate understanding of patient education practices by health professionals at discharge is essential to guide effective interprofessional intervention efforts for safe transitions of care.

## Methods

### Study Design

We conducted an observational quality improvement study from September 2018 through October 2019. The Institutional Review Board at the NYU School of Medicine exempted this study from review because the study observed routine communication practices. The study adhered to Standards for Quality Improvement Reporting Excellence (SQUIRE) reporting guidelines.<sup>17</sup>

### Setting

Observations took place on the internal medicine services at 2 urban academic teaching hospitals: a 1100-bed tertiary-care hospital and a 450-bed safety net hospital affiliated with a federally qualified health center. Both services are staffed by residents from 2 affiliated but discrete training programs.

### Participants

Eligible patients were purposefully selected from the “discharge before noon” (DBN) list on the general internal medicine service. A patient was put on the DBN list the day prior if the medical team flagged a patient as a possible discharge before noon.<sup>18</sup> A study author (S.P.T.) screened patients on the DBN list the night prior for the days when observers were available. Preference was given to those with greater likelihood of actual discharge (eg, stable clinical status). Additionally, to increase likelihood of more discharge communication observed, patients with a higher number of medication changes and discharge action items were selected. Only English- and Spanish-speaking patients were included.

Among the 55 patients approached to participate, verbal consent was obtained from 44 (80%). Of these, 33 (75%) pa-

## Key Points

**Question** What are medicine-floor patients told on the morning of their discharge before noon, and by whom?

**Findings** In this quality improvement study of 33 patients in 2 teaching hospitals, only 1 patient received counseling on 6 key discharge communication domains (medication changes, appointments, disease self-management, red flags, question solicitation, and teach-back). Attending physicians were in the patient room for a median of 3 minutes on the morning of discharge; interns, 4 minutes; and nurses, 22.5 minutes.

**Meaning** These findings suggest that significant gaps occur in patient education on the morning of discharge and represent a target for interventions to decrease posthospital morbidity.

tients were observed through discharge, while 11 (25%) had delayed discharges and were not included in the final study sample.

### Data Collection Procedures and Measures

On the day of discharge, a trained observer sat at the bedside of a patient from 7 AM until time of discharge and typed verbatim all communication in a templated electronic document (“field note”), excluding any patient protected health information or staff identifiers. Field notes included additional observer reflections. The observer used a timer (ATracker PRO, WonderApps AB, iOS) to record time spent with the patient on the day of discharge. Any time spent at the bedside was recorded, regardless of the task being performed (eg, nurse dispensing medications). Observers attempted to be unobtrusive and accommodated all patient requests for privacy. After each patient had been formally discharged, the observer conducted a brief postdischarge interview with the patient, asking, “Did anyone talk to you about what you need to do at home before today?” to assess the reliability of the field note as representing the discharge education the patient received during their hospitalization.

### Analysis

The conversations between all staff and patients in the 33 field notes were deductively analyzed independently by 2 independent coders (S.S.C. and S.P.T.) using Dedoose (Dedoose.com) for the presence of patient education and counseling on the following discharge communication domains: (1) name of medication change and function of at least 1 of the discharge medications, such as “Atorvastatin is a cholesterol medication,” and further education on purpose of medication change, such as “Atorvastatin is a cholesterol medication. It was added because it will prevent future heart attacks or strokes”; (2) purpose of postdischarge appointments; anticipatory guidance such as (3) disease self-management and (4) red flags; and patient-centered communication techniques including (5) teach-back and (6) staff solicitation of patient questions or concerns. These domains were established a priori by the investigators based on review of prior health services research and recommendations from national societies.<sup>19-26</sup> The coders met throughout independent assessment in a constant comparative

approach and resolved any differences in the presence or absence of a communication domain with discussion. The authors selected representative quotes from field notes to illustrate the type of discharge communication in each domain.

For each domain, coders noted the types of patient education present and the type of health care professional who delivered it. These data were entered into a Microsoft Excel spreadsheet. Descriptive statistics were calculated using standard Excel formulas. Total time spent with the patient by each team member was recorded, and the median and IQR calculated by type of health care professional. We also collected self-reported demographic information from the electronic medical record, such as age, sex, race and ethnicity, and language preferences.

## Results

### Patient Characteristics

A total of 33 patients on internal medicine floors were observed at 2 teaching hospitals on the day of discharge from 7 AM until they exited the floor, with an average observation time of 4.7 hours for each patient. The data analyzed consisted of 155 observation hours. Patients had a mean (SD) age of 63 (18) years; 14 (42%) identified as White, 15 (45%) were female, and 6 (18%) had a preferred language of Spanish (Table 1). Among those who spoke Spanish, 23% of encounters were with the assistance of an interpreter or native speaker (eTable in Supplement 1).

Postdischarge interview responses were obtained from 30 of 33 patients. Three interviews were not completed due to timing of patient transportation. During this brief interview, 24 (80%) patients reported receiving no discharge education or information prior to the start of observation.

### Key Communication Domains

#### Medication and Purpose of Medication Changes

Of the 33 total discharged patients, 29 (88%) had to start a new medication or change the dose of an existing medication and 11 (33%) had to stop a prior medication completely. Of the 29 patients discharged with a new or changed medication, 8 (28%) were not told the name and basic function of the medication change. More than half (17 [59%]) did not receive counseling on the purpose for the medication change by any member of the health care team (Table 2; eFigure in Supplement 1). Of the 11 patients with prior medication discontinued, more than half (6 [55%]) were not counseled on the reason for the discontinuation.

When residents or attending physicians spoke about medication changes with patients, they were more prone to say, “that pill” or “med,” with deflection to the discharge paperwork.

Attending physician: “We stopped this other blood pressure pill. It will say on your papers that can sometimes cause swelling as a side effect.” (Observation 4)

**Table 1. Characteristics of Patients and Settings Observed on Day of Discharge (n = 33)**

Characteristic	Patients, No. (%)
Sex	
Female	15 (45)
Male	18 (55)
Race and ethnicity	
Asian	2 (6)
Black/Afro-Caribbean	5 (15)
Hispanic	9 (27)
White	14 (42)
Missing	2 (6)
Preferred language	
English	27 (82)
Spanish	6 (18)
Day of the week	
Weekday	28 (85)
Weekend	5 (15)
Disposition	
Home	27 (82)
Skilled nursing facility or nursing home	6 (18)
Location	
Safety net hospital affiliated with FQHC	18 (55)
Tertiary-care academic hospital	15 (45)

Abbreviation: FQHC, federally qualified health center.

Nurses spoke about medication changes in a variety of ways, most often while going over discharge paperwork with the patient. Most nurses explicitly stated the key medications' names and basic functions while reviewing discharge paperwork. A few actually highlighted which pills patients already received in the hospital on the discharge paperwork and told patients how to accordingly adjust their home medication schedule:

Nurse: “Just remember, the Lovenox, the blood thinner, to take it every 12 hours. You can switch it to a more comfortable time for yourself than we do in the hospital. I'll just write down the last time you got it here.” (Observation 18)

By contrast, the least extensive counseling observed entailed only giving patients the discharge paperwork or pointing at the papers without mention of specific medications:

Nurse: “This is a list of meds you should be taking. The way you take this one has changed.”

The RN is pointing while flipping through the discharge papers, and the nephew translates.

RN: “Okay. So this is the complete list.” (Observation 20)

#### Postdischarge Appointments and Purpose

A total of 31 patients were discharged with follow-up appointments. Of these patients, 15 (48%) were not told the purpose of any of their appointments by any member of the health care team. Notably, if the reason for follow-up appointments was explained, it was usually after a patient either asked about it

**Table 2. Total Patient Education Domains Addressed per Patient on Day of Discharge**

No.	Educational domains addressed during observed encounter	Patients who received aforementioned education domains
0		3
1		6
2		8
3		9
4		5
5		1
6		1

directly or expressed concerns about either their health or logistics of multiple appointments.

Intern: "We'll get an appointment with your PCP."

Patient protests, "But I already had one on January 8th!"

The intern responds, "We want you to do it again for the antibiotics after you'll finish your course." (Observation 14)

#### Anticipatory Guidance: Self-management, Symptom Expectations, and Red Flags

More than half, 18 of 33 (54%) patients, did not receive any counseling on self-management of their primary discharge diagnosis or other diagnoses, and 24 (73%) were not given any information about what type of symptoms to expect after discharge or the expected course for their illness after leaving the hospital. Most patients, 27 of 33 (82%), were not counseled on red-flag signs and symptoms that should prompt immediate return to care.

Patients who were not given any explicit anticipatory guidance were often referred to their discharge instruction packets for further education. Some of this information was not relevant to their hospitalization:

Nurse: "Here in this packet we have education on diet, ways for decreasing stroke risk, decreasing plaques, diabetes info."

Patient: "That's so much information. They have stuff that's not really relevant to my hospitalization."

Nurse: "Yeah, the discharge papers are like a book."

Patient: "Why do they do all this info at discharge? I look at all the stuff in the packet and it looks like I am about to die."

Nurse: "I'm not sure...records, I guess. Ok so I just need your John Hancock right here...(signs paper)." (Observation 33)

If further education was verbally provided, it often took the form of direct instructions without connection to the patient's health. For example, a patient who was admitted for a gastrointestinal bleed exacerbated by alcohol use disorder was given the following management counseling:

Intern: "My only teaching point, because you'll most likely have this again, is that next time when you go to the ED, tell them you need a CTA." (Observation 5)

However, the above patient later spoke with the observer about what she believed had caused the admission, with no mention of alcohol use contributing:

Patient: "Bleeding happens when I get some bacteria in the colon. This admission was because of a recent hamburger that was mixed pink meat and normal meat." (Observation 5)

#### Patient-Centered Communication: Teach-Back and Question Solicitation

Almost none of the discharge observations included any use of teach-back to enhance patient understanding of the discharge plan, except for 1 patient (3%) by an attending physician. Similarly, 28 of 33 (85%) patients were not asked by anyone on the health care team if there may be barriers to following the care plan.

Less than half (14 [42%]) of the patients were not asked if they had any questions. If patients brought up questions themselves, it was often a logistical question, which was mostly deferred to another team member or met with uncertainty:

Case manager reenters and collects signed papers. Patient says, "I won't have to pay because I have Medicare and Medicaid?"

Case manager shrugs and says, "I don't know if you'll have to pay, but if there's a balance they'll send you..." (Observation 3)

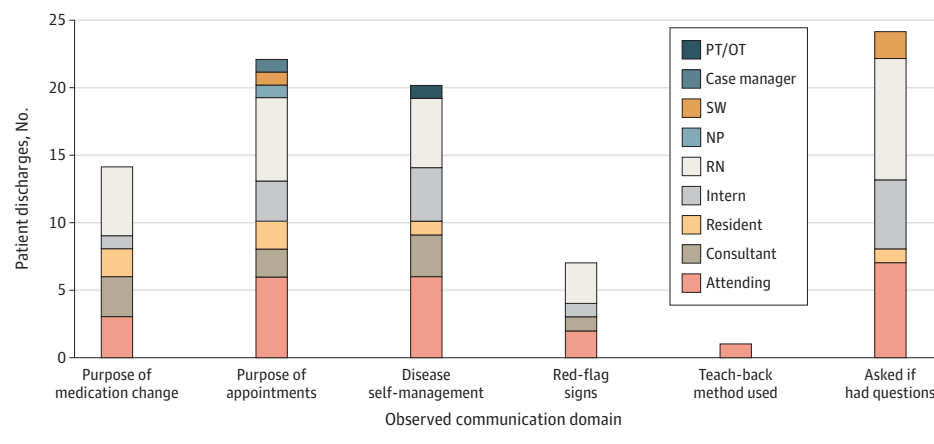
#### Roles in Communicating Aspects of Discharge Education

There were variable roles seen in who communicated what aspects of discharge education. Most domains were communicated in an ad hoc manner with no clear pattern of responsibility over discharge education areas, as depicted in **Figure 1**, with 2 exceptions: nurses were more likely to provide information about new or changed medications and follow-up appointments; the only example of teach-back was by an attending physician.

#### Time

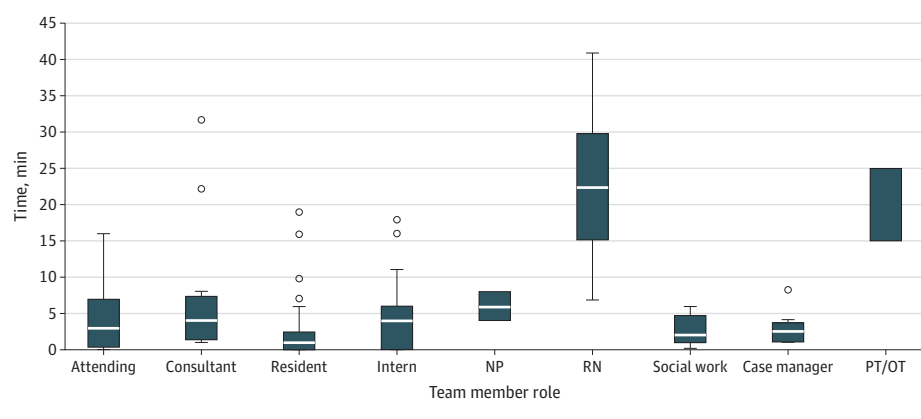
Every patient had a nurse and attending physician on their care team, while other team members were variably involved. For example, interns were on 27 of the 33 patient teams, which was variable on weekend days. Nurses spent the most total time with patients on the day of discharge, with a median (IQR) of 22.5 (15.5-30.0) minutes at bedside while performing any task, including charting, medication administration, and discharge education. The median attending physician time spent at bedside was 3.0 (0.5-7.0) minutes, with 7 patients not seen by an attending physician. In contrast, interns (n = 27) spent a median time of 4.0 (0.75-6.0) minutes with patients (**Figure 2**). Senior residents spent a median time of 1.0 (0-2.0) minutes. The majority of time at bedside was not spent discussing discharge education; instead, communication addressed immediate patient needs (eg, meals, micturition, and discomfort) and logistical issues, such as transportation and time of discharge.

Figure 1. Frequency of Discharge Education Domain Addressed per Team Member



For each discharge education domain observed on discharge, this graph highlights which roles addressed which discharge education domain. NP indicates nurse practitioner; OT, occupational therapist; PT, physical therapist; RN, registered nurse; SW, social worker.

Figure 2. Time With Patients by Team Member Role



The box plot represents the range of time spent at the bedside by each team member for the 33 patient discharges observed in the study. The horizontal line in the boxes indicates the median, the outer bounds of boxes represent lower and upper quartiles, and whiskers extend to the 5th and 95th IQRs; circles indicate observed data points. NP indicates nurse practitioner; OT, occupational therapist; PT, physical therapist; RN, registered nurse.

## Discussion

Our direct observation of 33 patients on the day of discharge demonstrates the gaps in discharge care at 2 teaching hospitals. This study adds to current knowledge by directly observing the discharge process from the patient perspective and quantifying how often any member of the interprofessional team engaged in key communication practices. Our descriptive analysis of discharge communication illustrates that overwhelmingly, the health care team provided substandard explanations to patients regarding discharge plans. This is striking given the wealth of health services research and even policy measures, such as the 3-item Care Transitions Measure, that support these communication practices.<sup>27-29</sup> Our findings reinforce the need to critically assess actual practices and operationalize informed implementation efforts.

Specifically, while we observed that most patients were told the basic function for any medication changes by at least 1 team member, many left the hospital without counseling on the purpose of why a medication was changed or rationale for appointments. The lack of this “why” element in medication education may contribute to patients’ well-described nonadherence to medication plans following discharge.<sup>4,7,8,30</sup> Simi-

larly, without discharge counseling on pending studies or symptom monitoring, a patient who feels relatively better may not understand the importance of follow-up.<sup>31,32</sup> These findings can inform efforts to reduce high no-show rates in clinics following discharge, which is shown to improve posthospitalization morbidity and adverse events.<sup>33-38</sup>

One way to gauge patient understanding is to ask the patient to teach back what he or she learned about the discharge plan, which has been associated with reduced readmissions.<sup>39-41</sup> Despite these benefits, we only observed 1 patient being asked about his understanding of the care plan. These missed opportunities shed light on a larger problem: lack of integration of evidence-based interventions into routine discharge practice. There may be a gap between health services research findings and clinician educators, such that these communication skills may be touched on briefly during limited transitions-of-care curriculums.<sup>16,42,43</sup> However, these communication skills need reinforcement with observation and feedback if they are to be implemented in real work settings.<sup>43</sup>

A key implication of our work is the need for systems that allow for transparency regarding the purpose of medication changes, appointments, follow-up action items, and other anticipatory guidance such that patients can be informed participants in their care. Similar to how the name and dosage of

medication changes are clear on discharge instructions and, subsequently, more frequently conveyed, transparency of the other discharge domains may be a step forward, such that all interprofessional team members are primed to better communicate this to the patient and keep patients out of the dark. Additionally, a shared mental model among the discharging team of who will take ownership for which domains will minimize assumptions.

Ultimately, the actual impact of these results is limited by the cognitive demand of patients at discharge: even had the observed patients been thoroughly counseled on all the key communication domains at discharge, would they understand and retain it? There are countless factors that can play into an individual patient's understanding of his or her discharge plan, such as literacy, health or social stressors, and preferential focus on the logistical aspects of exiting the hospital, such as transportation and meal timing.<sup>6,44,45</sup> Our study suggests that systems should be developed to reinforce discharge education in the postdischarge period, such as through audio or video recordings of hospital-based education, interactive discharge education materials, and early follow-up.<sup>46-48</sup> These have already been incentivized by programs such as the Transitional Care Model, which reimburses clinicians for effective postdischarge management.<sup>32</sup> Implementing a feedback system to gauge patient understanding of their postdischarge plan may help prioritize which patients may benefit more from multiple reinforcements.<sup>4,49</sup>

### Limitations

Limitations in our study include the small sample size, with collection limited by the time-intensive nature of the observations. It is possible that these patients had discharge education prior to that day; although 80% reported not receiving prior instruction, it is possible that such education was not signposted as such. We used a purposive sampling method that selected patients who had more discharge action items and

were on a list of planned discharges in a teaching hospital, which may introduce selection bias. We cannot be sure that our findings would be generalizable to discharges that are unplanned, simpler, or of patients who do not speak English or Spanish. It seems likely, however, that in our time-compressed hospitals that such patients would have received even less discharge communication and time to ask clarifying questions. Additionally, these findings cannot be generalized to nonteaching hospitals, as attending physician and interprofessional team practices may differ. Finally, the observations in this study were collected before the onset of the COVID-19 pandemic. Although discharge education practices in the time of a pandemic merit dedicated research, we hypothesize that discharge education is likely even more limited with now-ubiquitous isolation precautions and personal protective equipment.<sup>50-52</sup>

Our study revealed that some patients receive more robust discharge education than others, indicating systemic inequality in the patient experience. Further work must be done to explore ways to mitigate this discrepancy and ensure equal care for all patients.

## Conclusions

Direct field observation from the perspective of the patient is critical to inform gaps in the delivery of high-quality discharge care. Findings of this quality improvement study suggest that there is substantial opportunity for improved discharge techniques to enhance the safety and quality of care for patients leaving the hospital. Interventions must be implemented to increase transparency of patient education and understanding, particularly among the interprofessional team to clarify assumptions of each other's roles. Further studies on effective communication strategies as well as systems redesign that foster patient-centered discharge education are imperative.

### ARTICLE INFORMATION

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**Concept and design:** Trivedi, Corderman, Schoenthaler, Horwitz.

**Acquisition, analysis, or interpretation of data:** Trivedi, Corderman, Berlinberg, Schoenthaler.

**Drafting of the manuscript:** Trivedi, Corderman, Berlinberg.

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