

Residents' Exposure to Educational Experiences in Facilitating Hospital Discharges

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ABSTRACT

Background There is an incomplete understanding of the most effective approaches for motivating residents to adopt guideline-recommended practices for hospital discharges.

Objective We evaluated internal medicine (IM) residents' exposure to educational experiences focused on facilitating hospital discharges and compared those experiences based on correlations with residents' perceived responsibility for safely transitioning patients from the hospital.

Methods A cross-sectional, multi-center survey of IM residents at 9 US university- and community-based training programs in 2014–2015 measured exposure to 8 transitional care experiences, their perceived impact on care transitions attitudes, and the correlation between experiences and residents' perceptions of postdischarge responsibility.

Results Of 817 residents surveyed, 469 (57%) responded. Teaching about care transitions on rounds was the most common educational experience reported by residents (74%, 327 of 439). Learning opportunities with postdischarge patient contact were less common (clinic visits: 32%, 142 of 439; telephone calls: 12%, 53 of 439; and home visits: 4%, 18 of 439). On a 1–10 scale (10 = highest impact), residents rated postdischarge clinic as having the highest impact on their motivation to ensure safe transitions of care (mean = 7.61). Prior experiences with a postdischarge clinic visit, home visit, or telephone call were each correlated with increased perceived responsibility for transitional care tasks (correlation coefficients 0.12 [$P = .004$], 0.1 [$P = .012$], and 0.13 [$P = .001$], respectively).

Conclusions IM residents learn to facilitate hospital discharges most often through direct patient care. Opportunities to interact with patients across the postdischarge continuum are uncommon, despite correlating with increased perceived responsibility for ensuring safe transitions of care.

Introduction

Nearly 1 of 5 patients discharged from the hospital will experience an adverse event. Many will result in avoidable morbidity and added health care costs.^{1,2} Significant public attention is focused on improving transitional care.³ In hospital-based settings, resident physicians play an important role within the complex interdisciplinary discharge process.⁴ This has led to a national consensus that successfully orchestrating care transitions should be reflected in the core competencies of specialties involved in inpatient care.^{5–7}

A diverse collection of curricula has been published focusing on transitions of care,⁸ yet the degree to which they are implemented is not well understood. In a 2009 survey of IM residency program directors,⁹ only 16% reported having formal discharge planning

curricula. This may understate resident experiences, as many educational modalities happen on an individual level (eg, discharge summary review, on-rounds teaching) and may not be catalogued by programs. Thus, it is important to understand learners' perceptions of educational experiences to create a full picture of how this competency is being addressed.

The education community also has an incomplete understanding of the efficacy of different educational approaches to care transitions. Curricula in this area are difficult to compare because they are content specific and their impact on behaviors is complex and difficult to measure. One theory argues that a person's willingness to adopt a specific behavior is dependent on his or her attitude toward the behavior.¹⁰ Thus, experiences in transitioning care may teach different skills, but ultimately these experiences need to influence participants' fundamental perceptions of responsibility for this aspect of care to affect practice.

We sought to determine the prevalence of specific educational interventions being used to teach safe

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hospital discharge practices within a sample of US internal medicine (IM) residency programs as well as assess correlations with perceived responsibility for ensuring safe hospital discharges.

Methods

Setting and Participants

We conducted a cross-sectional, 24-question survey (provided as online supplemental material) of IM residents at 9 US university- and community-based residency programs. We used purposive sampling and professional relationships to identify potential sites. We explicitly sought to identify programs with diverse program sizes and geographic locations. Program sizes ranged from 38 to 170 resident physicians (mean = 91), and programs were balanced across geographic regions within the United States (TABLE 1).

Survey

There is no existing instrument with validity evidence for measuring responsibility for patients transitioning from inpatient to ambulatory care. Thus, we developed a new instrument that approached this construct through 2 methods. We first utilized a single question derived from prior work in this area to assess perceived duration of postdischarge responsibility (“How many days are inpatient providers responsible for their patients after they are discharged?”).¹¹ Existing consensus guidelines do not establish a standard for inpatient providers’ duration of responsibility after hospital discharge.³ We then developed specific questions to assess residents’ perceived responsibility within 4 key domains in posthospital transitions of care identified from existing literature: (1) medication reconciliation¹; (2) lab follow-up¹²; (3) follow-up appointments¹³; and (4) communication with ambulatory providers.¹⁴ Within each domain, we used 1 question to assess resident perceptions of responsibility for discharge practices that are considered the standard of care based on policy statements from professional societies.^{3,15} A second question in each domain assessed resident perceptions of behaviors considered above and beyond the standard of care. Responses to the 8 questions were ranked on a 4-point Likert scale (4, strongly agree, to 1, strongly disagree), and items were summed to create a cumulative score for perceived responsibility for transitional care tasks.

Residents also were asked to identify the educational experiences they had completed: lectures, small group discussions, postdischarge home visits, postdischarge telephone calls, postdischarge clinic visits, on-rounds teaching, formalized discharge summary review and feedback, and online modules. These

What was known and gap

Significant attention has focused on improving transitions of care after hospitalization, yet few studies have assessed resident education in this area.

What is new

A multi-site survey study found that internal medicine residents learn to facilitate discharges mostly through direct patient care experiences.

Limitations

Potential for sampling and recall bias; survey instrument without validity evidence.

Bottom line

Review and feedback on discharge summaries was a valuable, underused methodology, and residents following patients after discharge increased their perception of responsibility for discharged patients.

interventions were selected based on expert opinion and review of existing literature.⁸ Residents were asked to rank the impact of these approaches on their motivation to ensure safe transitions of care using a 1 to 10 scale (1, no effect, to 10, significantly impacted my motivation). Questions were refined in 2 sequential, heterogeneous focus groups of 6 to 8 attending and resident physicians, with “think aloud” cognitive interviewing to ensure consistency in question interpretation.

The survey was administered between September 2014 and February 2015 at participating programs using SurveyMonkey (SurveyMonkey Inc, San Mateo, CA) or in paper form. This was followed by 3 reminder e-mails at all sites except 1, where 2 reminders were sent based on Institutional Review Board restrictions.

The study was approved by the Institutional Review Board at each participating site.

Analysis

Data were analyzed using SAS version 9.3 (SAS Institute Inc, Cary, NC). Survey responses were analyzed using descriptive statistics. Between-group comparisons were made using chi-square tests, and correlations between variables were analyzed using Kendall tau correlation coefficient.

Results

Of 817 IM residents invited to participate, 469 (57%) completed the survey, with response rates for the various sites ranging from 45% to 76%. Respondents were balanced across postgraduate years, and the majority of respondents (61%, 254 of 420) indicated an intention to pursue a subspecialty career (TABLE 1).

On-rounds teaching (74%, 327 of 439) and lectures (52%, 226 of 439) were the most common educational

TABLE 1
Participant Characteristics

Characteristic	No. (%) ^a
Postgraduate year (PGY)	
PGY-1	163 (39)
PGY-2	126 (30)
PGY-3	131 (31)
Missing responses	49
Anticipated career path	
Primary care	86 (21)
Hospital medicine	80 (19)
Subspecialty	254 (61)
Missing responses	49
Community programs	22 (5)
University-based programs	447 (95)
Program region	
West	126 (27)
Midwest	126 (27)
Southeast	123 (26)
Northeast	94 (20)

^a Missing responses were excluded from the denominator of each calculation of percentage of total response.

methods experienced by residents pertaining to post-hospital care transitions (FIGURE 1). Over a quarter of residents (32%, 142 of 439) had taken part in a postdischarge clinic visit, while other forms of post-discharge patient contact, such as telephone calls or home visits, were less common (12% [53 of 439] and 4% [18 of 439], respectively). Less than a quarter of respondents (23%, 99 of 439) had received formal

review of and feedback on a discharge summary (PGY-1: 18%, 22 of 124; PGY-2: 25%, 31 of 126; and PGY-3: 24%, 31 of 131).

Residents rated the impact of the educational experiences on their motivation to ensure safe hospital discharges between 3.62 and 7.61 on a 1 to 10 scale (mean = 6.5; FIGURE 2). Online modules and lectures were ranked lower than all other experiences (3.62 and 5.95, respectively). Residents rated post-discharge home visits, discharge summary feedback, and postdischarge clinic visits the highest (7.13, 7.38, and 7.61, respectively). None of the educational experiences were correlated with perceived duration of responsibility (TABLE 2). However, the 3 educational experiences involving contact with patients after discharge (clinic visits, telephone calls, and home visits) had small but statistically significant correlations with cumulative perceived responsibility for transitional care tasks as measured by the sum of responses to the 8 domain-specific questions (correlation coefficient 0.12 [$P = .004$], 0.1 [$P = .012$], and 0.13 [$P = .001$], respectively).

Discussion

In this multisite survey of IM residents, direct patient care was the most commonly reported means through which residents learned to successfully facilitate hospital discharges. Despite being a cornerstone of patient care, less than a quarter of residents indicated that they had received formal feedback on their discharge summaries. Furthermore, opportunities for residents to engage with patients across the post-

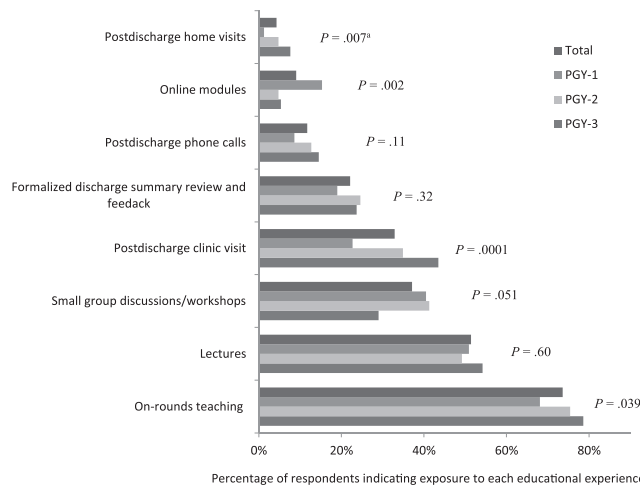


FIGURE 1
Internal Medicine Residents' Exposure to Transitions of Care Education

^a P values refer to the comparison of postgraduate year (PGY) groups based on reported frequency of exposure to each educational experience using the Mantel-Haenszel chi-square test.

^b There were 31 missing responses to this question. These responses were excluded from the denominator for the calculation of percentage of total responses.

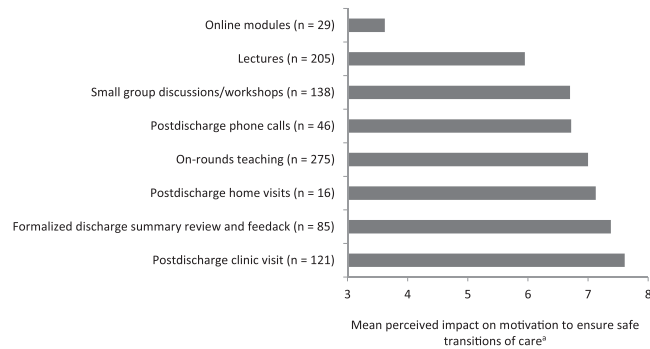


FIGURE 2
Perceived Impact of Educational Experiences on Motivation to Ensure Safe Transitions of Care

^a Based on 1–10 scale (1, no effect, to 10, significantly increased my motivation).

discharge care continuum were uncommon, despite being rated highly by residents and having the strongest correlation with their perceived responsibility for ensuring safe transitions of care.

These results have several implications for medical educators. This work expands on prior qualitative data¹⁶ suggesting that residents learn transitions of care skills through clinical practice more commonly than didactic experiences. While experiential grounding is a vital component of adult learning theory,¹⁷ ad hoc work-based education allows for role modeling of heterogeneous practice patterns. This is of concern, given variable attitudes toward transitions of care on the part of attending physicians,¹¹ who also often fall short of the ideal behaviors outlined in consensus guidelines.^{18–20} Research also suggests that higher patient census compromises the quality of attending physician care²¹ and that time constraints preclude high-quality discharge practices.^{18,22,23} Collectively, this suggests that ad hoc on-rounds teaching may deteriorate as workload rises.

Overcoming the inherent heterogeneity in clinical role modeling requires that attending physicians assess residents' transitional care competence using standardized metrics. Discharge summaries are an ideal starting place, as the literature provides several examples of how to teach and evaluate residents' discharge summaries.^{24–26} Similar to other studies,^{16,27} our results suggest that formal discharge summary review is underutilized, despite evidence of its efficacy. Conducting discharge summary reviews is an excellent starting point for programs seeking to build transitions of care curricula rooted in competency-based education.

While it is an important start, teaching specific skills alone (eg, discharge summaries) may not transform the practice of busy residents. The theory of planned behavior argues that a person's willingness to adopt a behavior depends on his or her attitude toward that behavior, along with his or her perceived self-efficacy and external pressures.¹⁰ In other words, residents require more than skills and external pressure to improve transitional care

TABLE 2
Associations Between Educational Experiences and Perceived Responsibility

Educational Experience	Duration of Responsibility Correlation ^a (P Value)	Cumulative Responsibility Correlation ^b (P Value)
Lectures	−0.006 (.89)	0.03 (.46)
Small group discussions/workshops	0.06 (.20)	−0.03 (.48)
Postdischarge home visits	0.02 (.58)	0.12 (.004)
Postdischarge telephone calls	−0.04 (.39)	0.1 (.012)
Postdischarge clinic visit	−0.002 (.96)	0.13 (.001)
On-rounds teaching	0.051 (.24)	0.08 (.06)
Formalized discharge summary review and feedback	0.0001 (> .99)	0.02 (.62)
Online modules	−0.03 (.55)	−0.05 (.18)

^a Kendall tau coefficient evaluating the relationship between each educational experience and perceived duration of responsibility after discharge. A positive coefficient indicates a correlation with longer duration of responsibility.

^b Kendall tau coefficient evaluating the relationship between each educational experience and respondents' cumulative task responsibility score, created from the sum total of responses to 8 questions assessing perceived responsibility for transitional care tasks (4, strongly agree, to 1, strongly disagree). A positive coefficient indicates a correlation with a higher cumulative task responsibility score.

practices. To truly achieve this competency, they must adopt an attitude of responsibility for ensuring safe transitions of care. Prior work²² indicates that in the absence of downstream follow-up it is easy for residents to abdicate responsibility for patients in the postdischarge period.

Our study found that only interventions that connected residents with patients after discharge had a significant correlation with their perceived responsibility. The literature contains examples of curricula that connect learners with patients after discharge through telephone calls, clinic visits, or home visits,^{28–30} yet our results indicate that these experiences are not widely used in IM programs. As residency programs seek to build their transitional care curricula, our results suggest that some aspect of patient follow-up may maximize the impact on residents' perceived responsibility for patients across the care continuum.

Our study has several limitations, including the relatively small number of sites that were selected using purposive sampling. It is possible that using professional relationships in selecting sites might have led to selection of programs with faculty particularly interested in transitions of care, biasing the results toward overrepresenting the actual prevalence of transitions of care education experiences nationally. An added limitation includes the response rate of 57% and the risk of nonresponse bias. This study's focus on physician responsibility, as care transitions often rely on interprofessional collaboration, is also a limitation. Finally, the survey lacks established validity evidence, and dependence on resident recall of prior educational experiences introduces the possibility of recall bias.

Further work is needed to develop tools to teach and assess residents' transitional care competency in ways that are efficient and resource sensitive to facilitate broader uptake in graduate medical education.

Conclusion

Internal medicine residents learn to facilitate hospital discharges most commonly through direct patient care. Opportunities to interact with patients across the postdischarge continuum are uncommon, despite being rated highly by residents and correlating with increased perceived responsibility for ensuring safe transitions of care.

References

- Forster AJ, Murff HJ, Peterson JF, et al. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med.* 2003;138(3):161–167.
- Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med.* 2009;360(14):1418–1428.
- Snow V, Beck D, Budnitz T, et al. Transitions of care consensus policy statement: American College of Physicians, Society of General Internal Medicine, Society of Hospital Medicine, American Geriatrics Society, American College of Emergency Physicians, and Society for Academic Emergency Medicine. *J Hosp Med.* 2009;4(6):364–370.
- Pinelli VA, Papp KK, Gonzalo JD. Interprofessional communication patterns during patient discharges: a social network analysis. *J Gen Intern Med.* 2015;30(9):1299–1306.
- Iobst W, Aagaard E, Bazari H, et al. Internal medicine milestones. *J Grad Med Educ.* 2013;5(1 suppl 1):14–23.
- The family medicine milestone project. *J Grad Med Educ.* 2014;6(1 suppl 1):74–86.
- The general surgery milestone project. *J Grad Med Educ.* 2014;6(1 suppl 1):320–328.
- Buchanan IM, Besdine RW. A systematic review of curricular interventions teaching transitional care to physicians-in-training and physicians. *Acad Med.* 2011;86(5):628–639.
- Aiyer M, Kukreja S, Ibrahim-Ali W, et al. Discharge planning curricula in internal medicine residency programs: a national survey. *South Med J.* 2009;102(8):795–799.
- Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991;50(2):179–211.
- Burke RE, Ryan P. Postdischarge clinics: hospitalist attitudes and experiences. *J Hosp Med.* 2013;8(10):578–581.
- Roy CL, Poon EG, Karson AS, et al. Patient safety concerns arising from test results that return after hospital discharge. *Ann Intern Med.* 2005;143(2):121–128.
- Misky GJ, Wald HL, Coleman EA. Post-hospitalization transitions: examining the effects of timing of primary care provider follow-up. *J Hosp Med.* 2010;5(7):392–397.
- Kripalani S, LeFevre F, Phillips CO, et al. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA.* 2007;297(8):831–841.
- Greenwald JL, Halasyamani L, Greene J, et al. Making inpatient medication reconciliation patient centered, clinically relevant and implementable: a consensus statement on key principles and necessary first steps. *J Hosp Med.* 2010;5(8):477–485.
- Greysen SR, Schiliro D, Curry L, et al. “Learning by doing”—resident perspectives on developing competency in high-quality discharge care. *J Gen Intern Med.* 2012;27(9):1188–1194.

17. Cross KP. *Adults as Learners: Increasing Participation and Facilitating Learning*. San Francisco, CA: Jossey-Bass; 1981.
18. Jones CD, Vu MB, O'Donnell CM, et al. A failure to communicate: a qualitative exploration of care coordination between hospitalists and primary care providers around patient hospitalizations. *J Gen Intern Med*. 2015;30(4):417–424.
19. Al-Damluji MS, Dzara K, Hodshon B, et al. Hospital variation in quality of discharge summaries for patients hospitalized with heart failure exacerbation. *Circ Cardiovasc Qual Outcomes*. 2015;8(1):77–86.
20. Horwitz LI, Jenq GY, Brewster UC, et al. Comprehensive quality of discharge summaries at an academic medical center. *J Hosp Med*. 2013;8(8):436–443.
21. Elliott DJ, Young RS, Brice J, et al. Effect of hospitalist workload on the quality and efficiency of care. *JAMA Intern Med*. 2014;174(8):786–793.
22. Greysen SR, Schiliro D, Horwitz LI, et al. “Out of sight, out of mind”: housestaff perceptions of quality-limiting factors in discharge care at teaching hospitals. *J Hosp Med*. 2012;7(5):376–381.
23. Davis MM, Devoe M, Kansagara D, et al. “Did I do as best as the system would let me?” Healthcare professional views on hospital to home care transitions. *J Gen Intern Med*. 2012;27(12):1649–1656.
24. Myers JS, Jaipaul CK, Kogan JR, et al. Are discharge summaries teachable? The effects of a discharge summary curriculum on the quality of discharge summaries in an internal medicine residency program. *Acad Med*. 2006;81(suppl 10):5–8.
25. Rao P, Andrei A, Fried A, et al. Assessing quality and efficiency of discharge summaries. *Am J Med Qual*. 2005;20(6):337–343.
26. O'Leary KJ, Liebovitz DM, Feinglass J, et al. Creating a better discharge summary: improvement in quality and timeliness using an electronic discharge summary. *J Hosp Med*. 2009;4(4):219–225.
27. Otto M, Sterling M, Siegler E, et al. Assessing origins of quality gaps in discharge summaries: a survey of resident physician attitudes. *J Biomed Educ*. 2015;2015. pii: 341759.
28. Booth KA, Vinci LM, Oyler JL, et al. Using a resident discharge clinic for resident education and patient care: a feasibility study. *J Grad Med Educ*. 2014;6(3):536–540.
29. Record JD, Niranjani-Azadi A, Christmas C, et al. Telephone calls to patients after discharge from the hospital: an important part of transitions of care. *Med Educ Online*. 2015;20:26701.
30. Matter CA, Speice JA, McCann R, et al. Hospital to home: improving internal medicine residents' understanding of the needs of older persons after a hospital stay. *Acad Med*. 2003;78(8):793–797.



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