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# Discharge Communication: A Multi-Institutional Survey of Internal Medicine Residents' Education and Practices

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## Abstract

### Purpose

To characterize residents' practices around hospital discharge communication and their exposure to transitions-of-care instruction in graduate medical education (GME).

### Method

In 2019, internal medicine residents at 7 academic medical centers completed a cross-sectional survey reporting the types of transitions-of-care instruction they experienced during GME training and the frequency with which they performed 6 key discharge communication practices. The authors calculated a mean discharge communication score for each resident, and, using multiple logistic regression, they analyzed the relationship between exposure to types of educational experiences and discharge communication practices residents reported they performed frequently

(> 60% of time). The authors used content analysis to explore factors that motivated residents to change their discharge practices.

### Results

The response rate was 63.5% (613/966). Resident discharge communication practices varied. Notably, only 17.0% (n = 104) reported routinely asking patients to "teach-back" or explain their understanding of the discharge plans. The odds of frequently performing key discharge communication practices were greater if residents received instruction based on observation of and feedback regarding their communication (adjusted odds ratio 1.73; 95% confidence interval [CI], 1.07–2.81) or if they received explicit on-rounds teaching (adjusted OR 1.46; 95% CI, 1.04–2.23). In open-ended comments,

residents reported that experiencing adverse patient events at some point in the postdischarge continuum was a major impetus for practice change.

### Conclusions

This study exposes gaps in hospital discharge communication with patients, highlights the benefits of workplace-based instruction on discharge communication skills, and reveals the influence of adverse events as a source of hidden curricula. The results suggest that developing faculty to incorporate transitions-of-care instruction in their rounds teaching and integrating experiences across the postdischarge continuum into residents' education may foster physicians-in-training who are champions of effective transitions of care within the fragmented health care system.

**H**ospital discharge, a vulnerable time for patients, can lead to adverse outcomes<sup>1</sup> and hospital readmissions.<sup>2</sup> Suboptimal communication by health care providers and inadequate understanding of postdischarge plans by patients contribute to readmissions.<sup>3–5</sup>

A recent study of patients, caregivers, and health care providers has identified better discharge communication and coordination as top priorities for

improvement<sup>6</sup>; therefore, we believe it is critical to assess how medical educators are training the next generation of physicians to meet the needs of patients when they are discharged from the hospital.

The Accreditation Council for Graduate Medical Education defines the provision of transitions of care—particularly the ability to communicate a safe discharge plan to the patient and next provider—as a milestone during graduate medical education (GME) training.<sup>7</sup> As a result, there is a growing focus on curricula to address transitions of care<sup>8,9</sup>; however, the medical education community does not know the specific discharge communication practices that residents are learning or adopting nationally. Additionally, the community does not know which types of educational experiences contribute most to residents' discharge practices. Critically assessing both (1) the types of instruction on

discharges that residents experience and (2) the communication practices they use at discharge can guide the training of physicians such that they become skilled in effective transitions of care.

We sought to describe the current state of transitions-of-care communication practices, especially at hospital discharge, within GME programs in internal medicine (IM). Our results may lay the foundation for improving instruction and medical practice by identifying gaps within educational experiences and highlighting areas that need the most attention and intervention in GME.

## Method

### Setting and participants

We conducted a cross-sectional survey of IM residents at 7 U.S. residency programs at large academic medical centers (AMCs) in the spring of 2019.

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We recruited a convenience sample of programs, striving for geographic diversity by leveraging our professional and personal connections with educational leaders.

### Survey measures

To date, there are no validated survey instruments, to our knowledge, that query discharge communication practices or training experiences; therefore, we used a systematic process for designing high-quality questionnaires.<sup>10</sup> We constructed our 18-question survey tool (see Supplemental Digital Appendix 1 at <http://links.lww.com/ACADMED/B54>) by consulting national societies' consensus on transitions of care,<sup>11</sup> reviewing relevant literature,<sup>12–24</sup> and conducting interviews and focus groups with residents and junior faculty. We conducted iterative pilot testing with 5 expert reviewers and conducted cognitive interviews with 10 residents and 5 attending physicians—none of whom were in the final study sample—to refine the questionnaire and optimize consistency in how respondents interpreted the questions.

### Discharge-related educational experiences

We derived the options for formal didactic and experiential educational exposures by reviewing existing literature.<sup>8,25</sup> We also asked about workplace-based learning activities, such as bedside observation of and feedback regarding discharge communication with patients.<sup>7,26</sup> We included a free-response question allowing residents to expound on what contributed to changes in their discharge practices.

### Discharge communication practices

We identified 6 discharge communication practices as crucial to be addressed with patients when they are discharged from the hospital:

1. to explain the purpose of medication changes,<sup>16,17</sup>
2. to clarify follow-up appointments and their purpose (e.g., pending tests),<sup>13,18</sup>
3. to explain how patients might self-manage their disease(s),<sup>19–22</sup>
4. to describe expected symptoms,<sup>19,20</sup>
5. to provide warning signs or “red flags” to watch for,<sup>13,21</sup> and

6. to ask patients to teach-back or explain their understanding of the discharge plan.<sup>23,24</sup>

We deemed these discharge communication practices to be vital for patient safety and for teaching patients how to manage their health in the next care setting.

Residents rated the frequency with which they addressed each of these communication practices on a 5-point scale where 1 = rarely (0% to 20% of time), 2 = not usually (21% to 40% of time), 3 = sometimes (41% to 60% of time), 4 = often (61% to 80% of time), and 5 = almost always (> 80% of time). We also asked residents to rate the frequency with which anyone on their team communicated with patient caregivers or primary care clinicians—either directly or through a discharge summary.

### Data collection

All IM residents from each participating institution received an email invitation with an electronic link enabling them to participate in the survey (REDCap Version 9.1.23, Nashville, Tennessee). The survey was administered toward the end of the 2018–2019 academic year (i.e., from March to May 2019) to maximize residents' exposure to curricula. We did not offer incentives. We sent up to 2 reminders to nonresponders. Each participating institution obtained institutional review board approval, and survey response implied consent. The survey did not contain identifying demographic information and was, therefore, anonymous.

### Analysis

We collected descriptive statistics on the proportions of residents performing discharge communication practices and experiencing different types of educational instructions. To simplify the interpretation, we dichotomized residents into 2 groups: (1) residents who performed each practice with patients frequently (> 60% of the time; i.e., those who answered “often” or “almost always”) and (2) those who performed each infrequently (≤ 60% of time). We used SPSS software Version 25.0 (IBM Corp., Armonk, New York) to calculate these statistics.

To determine whether the 6 discharge communication practice items were

measuring a single construct, we conducted a principal component analysis. Factor analysis of these 6 items loaded to a single construct with factor loadings for each item ranging from 0.621 to 0.733 was conducted. We then used Cronbach's alpha to determine the internal consistency of these 6 items as a single measure of discharge communication practice behavior. The Cronbach alpha for the 6 discharge communication items was 0.838, demonstrating acceptable levels of internal consistency.

Based on these results, we averaged each resident's responses for the 6 discharge practices into a mean discharge communication score. We conducted independent sample *t* tests to compare the mean communication score for those who had been and those who had not been exposed to each type of transitions-of-care educational method.

To model the relationship between educational exposures and exemplary discharge patient communication practices, we dichotomized the mean discharge communication practice score into > 4 (indicating 6 communication practices performed in aggregate at least frequently [> 60% of time]) and < 4 (performed infrequently [≤ 60%]). We then used multiple logistic regression to assess the relationship between a resident's exposure to a particular type of discharge-related educational experience and the resident's dichotomized discharge communication score.

We used summative content analysis to examine the free-text responses to the questions, “*What factors, if any, have contributed to change in your behavior at discharge? If so, what practice did you change?*” Two authors (Z.K. and S.P.T.) read responses independently, paying careful attention to recurring words, and they independently categorized all responses based on those identified concepts.<sup>27</sup> Next, these 2 coders used a constant comparative approach to review their interpretations, and they resolved differences through discussion. All responses were reorganized based on the finalized categories. Coders also calculated the percentage of responses which applied to each category. Coders used Microsoft Excel (Version 2019, Redmond, Washington) for the content analysis.

## Results

Of the 966 IM residents invited to participate across the 7 institutions, 613 (63.5%) responded. Responses were similarly distributed across postgraduate year (PGY): 224 PGY-1 residents (36.5%), 193 PGY-2 residents (31.5%), and 196 PGY-3 residents (32.0%). Response rates among institutions ranged from 57.7% to 84.1%. Supplemental Digital Appendix 2 (<http://links.lww.com/ACADMED/B54>) shows the distribution of each institution's response by PGY. Importantly, we observed no clear pattern of nonresponse by PGY subgroups at each institution.

### Discharge-related educational experiences

Almost one-fifth (17.6%) of respondents (n = 108) did not recall any transitions-of-care educational experiences. About half reported having experienced lectures (55.5%; n = 340) or small-group workshops (49.1%; n = 301) on discharge practice. About a fourth (29.5%; n = 181) experienced formal review of discharge summaries.

Residents noted limited experiential learning in the postdischarge continuum. Specifically, only 10.4% (n = 64) reported conducting a postdischarge home visit and only a fifth (19.1%; n = 117) reported completing a postdischarge telephone call. Just over half of the resident respondents (51.2%, n = 314) reported participating in a postdischarge clinic visit.

Less than half (45.0%; n = 276) reported experiencing workplace-based learning, such as explicit, on-rounds teaching on discharge communication with patients. Only 18.9% (n = 116) reported being

observed and given feedback on their discharge communication with patients. Supplemental Digital Appendix 3 and Supplemental Digital Appendix 4 show, respectively, the distribution of curriculum among each PGY and institution (<http://links.lww.com/ACADMED/B54>).

### Team-related discharge behaviors

Less than half of residents (42.1%; n = 258) reported that someone on their team frequently reviewed the discharge plan with a patient's caregiver. Further, only 18.8% (n = 115) reported that, if a primary care physician (PCP) lacked access to the electronic health record, a team member would regularly speak to the PCP about the discharge plan, send the discharge summary directly to the PCP, or give the discharge summary to the patient to bring to the PCP.

### Discharge communication practices

There was considerable variation among residents' reported frequency of performing each discharge behavior (Table 1). The most frequently reported discharge communication behaviors included reviewing the purpose of medication changes and discussing red flags. Residents less frequently addressed self-management of disease, symptom expectation, or the purpose of follow-up appointments. Only 17.0% of residents (n = 104) reported that they frequently asked patients to teach-back the discharge plan (Figure 1).

### Mean communication score and discharge-related educational experiences

The mean discharge communication score on the 5-point scale was 3.36 (95% confidence interval [CI], 3.29–3.42).

Only 27.6% of the residents (n = 169) had a mean discharge communication score > 4, indicating they reported performing, on average, the 6 discharge communication practices frequently (> 60% of time). Table 2 compares the mean discharge communication score for residents exposed to a particular transitions-of-care educational experience with the score of those who had not had that educational exposure. All of the educational experiences except for lectures and online learning were associated with higher mean discharge communication scores.

After adjusting for PGY and institution in a multiple logistic regression model (Figure 2), the only types of educational experiences that were significantly associated with more frequent performance of communication practices were (1) direct observation and feedback (odds ratio [OR], 1.73; 95% CI, 1.07–2.81) and (2) explicit, on-rounds teaching about discharge communication (OR, 1.46; 95% CI, 1.04–2.23).

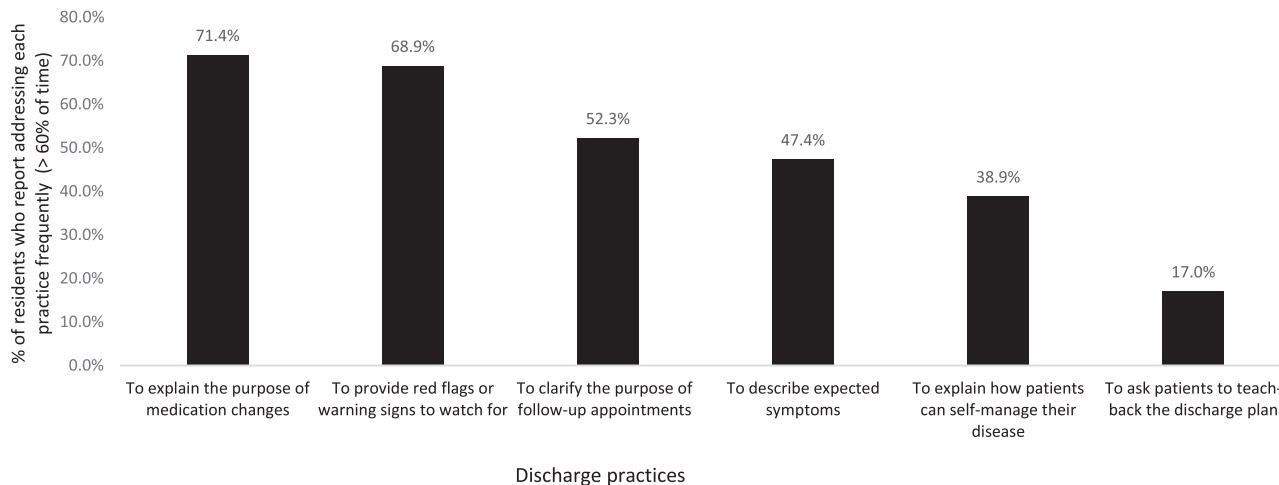
### Contributors to discharge behaviors

Of the 250 open-ended responses to factors contributing to residents' changes in discharge behavior, the majority focused on adverse postdischarge clinic visits (n = 92, 36.8%) or readmissions (n = 83, 33.2%) (Table 3). Residents' comments also indicated the importance of a senior resident or attending who provided role modeling, coaching, or feedback on patient-centered discharge behaviors (n = 39, 15.6%). A handful of comments revealed either classroom education (n = 21, 8.4%) or residents' own intuition (n = 20, 8.0%) as factors

Table 1  
Internal Medicine Residents' Self-Reported Frequency of Addressing Each of 6 Discharge Communication Practices with Patients (2019)<sup>a</sup>

Discharge communication practice	No. (%) of 613 residents endorsing each response				
	Rarely (0% to 20% of time)	Not usually (21% to 40% of time)	Sometimes (41% to 60% of time)	Often (61% to 80% of time)	Almost always (> 80% of time)
To explain the purpose of medication changes	20 (3.3)	36 (5.9)	119 (19.4)	175 (28.5)	261 (42.6)
To provide red flags or warning signs to watch for	29 (4.8)	50 (8.2)	110 (18.0)	205 (33.4)	217 (35.5)
To clarify the purpose of follow-up appointments	53 (8.6)	73 (11.9)	166 (27.1)	171 (27.9)	149 (24.3)
To describe expected symptoms	37 (6.1)	94 (15.3)	191 (31.2)	178 (29.0)	112 (18.3)
To explain how patients can self-manage their disease	56 (9.1)	123 (20.1)	196 (31.9)	169 (27.6)	69 (11.3)
To ask patients to teach-back the discharge plan	166 (27.1)	167 (27.2)	174 (28.4)	81 (13.2)	23 (3.8)

<sup>a</sup>The study involved 613 internal medicine residents from 7 geographically dispersed academic medical centers.



**Figure 1** Percentage of 613 internal medicine residents from 7 academic medical centers who report performing each of 6 discharge communication practices frequently (> 60% of time), 2019.

changing discharge practices. While personal experiences with adverse patient outcomes were powerful motivators for changing behavior, the perceived cause of the adverse event led to differing modifications in behavior, including changes in patient communication, more careful medication reconciliation, and increased provider documentation.

**Discussion**

Our multi-institutional survey estimates the extent of discharge communication

practices among residents. Less than half of residents report addressing symptom expectations or self-management of disease on a regular basis with their patients, and less than 20% frequently use the teach-back method for patient education at hospital discharge. This study therefore identifies large gaps in resident practices thought to be vital for increasing patient understanding and reducing readmissions.<sup>13,21,28</sup> Residents reported receiving limited transitions-of-care instruction—even though, according to our findings, exposure to particular educational experiences was

associated with increased reports of discharge communication practices. Our results align with prior work showing that residents received limited formal transitions-of-care instruction and few opportunities to interact with patients across the hospitalization–postdischarge continuum.<sup>25,29</sup> One unique contribution of our results is the revelation that 4 in 5 residents have not received observation and feedback on their discharge communication with patients. This finding is particularly striking given the breadth of education and feedback trainees receive for the transition of care

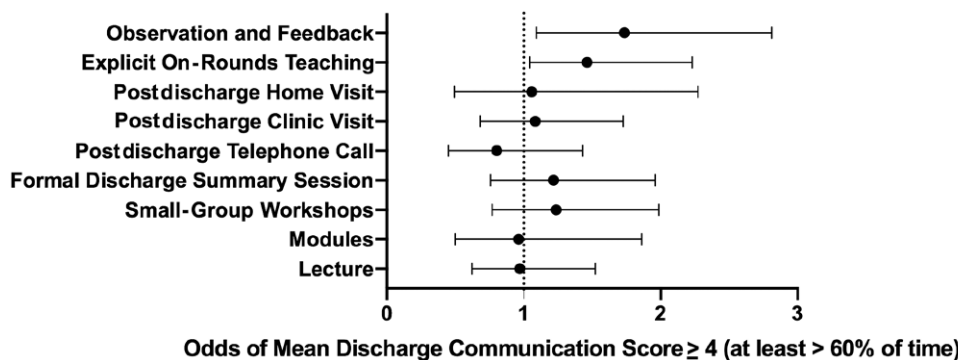
**Table 2**  
**Mean Discharge Communication Score,<sup>a</sup> by Exposure to Type of Discharge-Related Educational Experiences as Reported by 613 Internal Medicine Residents From 7 Academic Medical Centers, 2019**

Type of discharge-related education experiences	Discharge communication score for residents who had <i>not</i> experienced, mean (SD)	Discharge communication score for residents who had experienced, mean (SD)	Difference in mean score (95% CI)
Lectures	3.31 (0.83)	3.38 (0.85)	0.06 (−0.21 to 0.061)
Online modules	3.34 (0.84)	3.39 (0.89)	0.05 (−0.27 to 0.17)
Small-group workshop	3.26 (0.82)	3.46 (0.85)	0.19 (0.06 to 0.32)
Formal discharge summary review <sup>b</sup>	3.25 (0.84)	3.57 (0.78)	0.32 (0.17 to 0.47)
Postdischarge home visits with patients	3.33 (0.84)	3.59 (0.79)	0.26 (0.01 to 0.51)
Attending a postdischarge clinic visit with patients	3.25 (0.84)	3.45 (0.83)	0.20 (0.07 to 0.34)
Postdischarge telephone visits with patients	3.32 (0.85)	3.52 (0.77)	0.20 (0.14 to 0.39)
Explicit on-rounds teaching	3.18 (0.86)	3.56 (0.77)	0.38 (0.24 to 0.51)
Observation of and feedback regarding discharge communication with patients	3.27 (0.83)	3.70 (0.80)	0.43 (0.26 to 0.60)

Abbreviations: SD, standard deviation; CI, confidence interval.

<sup>a</sup>Mean of scores for frequency of performing 6 discharge communication practices with patients. Frequency scores based on a 5-point scale where 1 = rarely (0% to 20%), 2 = not usually (21% to 40%), 3 = sometimes (41% to 60%), 4 = often (61% to 80%), or 5 = almost always (> 80%).

<sup>b</sup>Formal discharge summary review entails a session reviewing how to effectively document and convey key aspects of the patient’s care and plan for transition of care.



**Figure 2** Logistic regression analysis to identify the types of discharge-related educational experiences associated with overall discharge communication practices reported as performed frequently among 613 residents at 7 internal medicine programs in 2019, adjusted for postgraduate year and institution.

from outpatient to inpatient (e.g., years of deliberate practice with admission notes and case presentations). In contrast, little emphasis is placed on the transition of care from inpatient to outpatient. These findings highlight important gaps both within discharge curricula and in current communication practices.

**Formal curricula**

While devoting curricular time to learning about care transitions may be important for building a foundation for trainees, we found that this time is, in and of itself, not sufficient to prepare residents to consistently perform effective discharge communication in actual patient care. Formal instruction through

lectures, online modules, and small-group workshops was not associated with higher odds of providing comprehensive patient discharge communication. This finding aligns with situated learning theory, which postulates that learning needs to be “embedded within an activity, context and culture.”<sup>30</sup> Didactics taught outside the authentic context of patient care may be

**Table 3**  
**Quotations on Factors Contributing to Changes in Behaviors at Discharge Among Residents at 7 Internal Medicine Programs, 2019**

Factor	Exemplar quotation(s)	No. (%) of 250 comments
Postdischarge clinic visits	Postdischarge clinic visits have shown me how often medication changes or symptom management plans are not fully understood and carried out by patients upon discharge. This has prompted me to try to include the teach-back method when going over discharges with patients.	92 (36.8)
Readmissions	Readmissions due to improper admission/discharge medication reconciliation. Sending people out on the wrong meds and having them bounce back due to adverse events makes you feel very, very guilty. Having a patient return to the hospital with refractory hypoglycemia after I renewed his glimepiride (when he had recently stopped taking it but it was still listed as an active home medication) rather than double check if he was still taking it. Now I go through all the meds I am starting or stopping, and why. Plus, I make sure they see their PCP within 10 days of discharge.  When you see readmissions for situations that could have easily been prevented by communicating good discharge instructions to patients.	83 (33.2)
Senior resident or attending role modeling, coaching, or giving feedback	Working with a senior who stresses the importance of a good and seamless discharge. These seniors emphasize the importance of discussing with the patient key information about medication changes, warning signs and going over important appointments with the patient. I have personally learned from my seniors that the most important part of the hospitalization is the discharge; without it, all the work done inpatient was in vain.  Seeing residents and attendings role model behaviors and plan review on day of discharge. I have adopted an attending's discharge-oriented rounds: (1) vitals—are they stable; (2) labs—any abnormalities or worrisome labs? (3) review reason for admission; (4) have we resolved the issue (or accepted it cannot be resolved); (5) discharge meds and review who is teaching; (6) discharge logistics—is follow-up arranged, how are they getting home, any home services needed, etc. And then in the room—review new meds, important follow-up or labs, and basic teach-back of expectations/red flags.	39 (15.6)
Lecture	I think learning about adverse consequences that affect patient outcomes in didactics. It opened up my mind about a lot of the things that put patients at risk.	21 (8.4)
Own intuition	I realized it is a good use of my time to explain everything to the patient before discharge for both patient satisfaction and clarity of understanding—this came from intuition and experience and no formal feedback or input.  Self-introspection if I was the patient, what would I want.  Time and having the headspace to understand the system as a whole.	20 (8.0)

Abbreviation: PCP, primary care physician.

effective in imparting abstract knowledge; however, such instruction may not result in the translation of knowledge into actual practice.

### Workplace-based learning

Less than half of the residents in our study reported experiencing explicit on-rounds teaching regarding their discharge communication, and less than a fifth reported getting feedback on their transitions-of-care communication at the bedside. And yet, these types of workplace-based instruction methods were the only types of instruction that predicted more comprehensive discharge communication practices on a regular basis. The open-ended comments attest to the power of senior resident and attending role models and coaches in shaping discharge behaviors. Given that workplace-based learning is rooted in the authentic context of patient care, our results highlight its potential effect on skill acquisition. These findings are consistent with cognitive apprenticeship theory, which asserts that novice learners develop skills through watching teachers in the workplace.<sup>31</sup> In this case, residents learn by observing how clinical faculty prioritize discharge care.<sup>31</sup> Additionally, deliberative practice theory supports the critical role of observation and feedback in mastering skills.<sup>32</sup> We note, however, that such role modeling, observation, and feedback around discharges cannot be executed without adequate faculty development. Educators and policymakers must be aware that even attending physicians have variable attitudes toward transitions of care<sup>33</sup> and may not share the same standards to allow residents to progress to indirect supervision or independence in discharging a patient.<sup>26</sup> Therefore, for cognitive apprenticeship and deliberative practice to be effective, stakeholders must first develop a shared mental model for best discharge practices for all care providers, especially faculty.

### Null and informal curricula

About one-fifth of the residents in our study did not report any type of instruction on transitions of care. It is important to consider the implications and underlying messaging this null curriculum conveys. Without dedicated guidance, residents learn through only the informal curriculum, which has been described in prior qualitative work as “learning by doing.”<sup>29</sup> Residents

responding to our survey often pointed to readmissions or other adverse outcomes in the outpatient setting as an impetus for changing their behaviors at discharge. This reactive approach to learning, whereby trainees alter their behaviors only when encountering the consequences of sub-optimal discharge practice, is clearly problematic and insufficient. While these unfavorable patient experiences can be emotionally charged and thus powerful motivators for learning, the unacceptable trade-off of patient safety calls for a more proactive approach to teaching residents how to transition care.

### Recommendations and limitations

We recommend, based on our findings, that all medical residents receive foundational workshops on effective discharge communication practices followed by deliberate reinforcement in the workplace. Small-group workshops, during which residents apply the best practices for communicating with patients at discharge, will help them develop the foundation required to effectively transition care in actual practice. Additionally, such small-group work would help establish a similar basis for all residents in electronic health record-related tasks of medication reconciliation and documentation through a patient safety lens. Then, to ensure the translation of transitions-of-care knowledge into practice, we advocate robust faculty development to establish a shared mental model and to facilitate effective workplace-based instruction through role modeling, coaching, and direct or simulated observation and feedback on discharge communication. Additionally, experiential learning with postdischarge clinics and home visits, as supported by the free responses in our survey, can improve trainees’ understanding of transitions of care across settings. Other studies have demonstrated that these interactions with patients post discharge correlate to increased sense of responsibility and perceived impact on learning in trainees.<sup>25,34</sup>

There are several limitations to our study findings. Residents’ responses to the survey represent self-reported behaviors and experiences, which may be subject to recall bias. Social desirability bias may also inflate reporting of the frequency of discharge practices performed by residents. To examine this possibility, future studies should

use direct observation of resident discharge communication practices to more accurately characterize resident behaviors. Additionally, aggregating educational exposures across different institutions may not account for variability in the content, context, and quality of instructional strategies. However, the qualitative responses on what influences discharge behaviors support the quantitative results. The perspectives of nurses, pharmacists, case managers, community practitioners, and patients were not solicited in survey development; had we included other perspectives, we might have focused on other aspects of care and communication. Lastly, we recognize that technology can aid in discharge communication<sup>35,36</sup>; however, the effectiveness of in-person communication and patient activation cannot be overlooked or easily replaced.<sup>37</sup>

### Conclusions

This multi-institutional survey among 7 geographically diverse AMCs revealed variation in discharge communication practices among IM residents. The limited exposures to instruction around transitions of care may contribute to inconsistent discharge practices and patient care. To improve proficiency in discharge communication practices, medical educators must develop and implement transitions-of-care educational experiences on rounds and at the bedside. This reform will require effective faculty development to ensure that clinical faculty are not only invested in prioritizing workplace-based instruction in discharge communication but also equipped to do so through coaching and observation and feedback.

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