Provider Characteristics, Clinical-Work Processes and Their Relationship to Discharge Summary Quality for Sub-Acute Care Patients

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BACKGROUND: Discharge summaries play a pivotal role in the transitional care of patients discharged to sub-acute care facilities, but the best ways to facilitate document completeness/quality remain unknown.

OBJECTIVE: To examine the relationship among clinical-work processes, provider characteristics, and discharge summary content to identify approaches that promote high-quality discharge documentation.

DESIGN: Retrospective cohort study.

SUBJECTS: All hip fracture and stroke patients discharged to sub-acute care facilities during 2003–2005 from a large Midwestern academic medical center (N=489). Patients on hospice/comfort care were excluded.

MAIN MEASURES: We abstracted 32 expert-recommended components in four categories ('patient's medical course,' 'functional/cognitive ability at discharge,' 'future plan of care,' and 'name/contact information') from the discharge summaries of sample patients. We examined predictors for the number of included components within each category using Poisson regression models. Predictors included work processes (document completion in relation to discharge day; completion time of day) and provider characteristics (training year; specialty).

KEY RESULTS: Historical components (i.e., 'patient's medical course' category) were included more often than components that directly inform the admission orders in the sub-acute care facility (i.e., 'future plan of care'). In this latter category, most summaries included a discharge medication list (99%), disposition (90%), and instructions for follow-up (91%), but less frequently included diet (68%), activity instructions (58%), therapy orders (56%), prognosis/diagnosis communication to patient/family (15%), code status (7%), and pending

studies (6%). 'Future plan of care' components were more likely to be omitted if a discharge summary was created >24 h after discharge (incident rate ratio=0.91, 95% confidence interval=0.84–0.98) or if an intern created the summary (0.90, 0.83–0.97).

CONCLUSION: Critical component omissions in discharge summaries were common, and were associated with delayed document creation and less experienced providers. More research is needed to understand the impact of discharge documentation quality on patient/system outcomes.

KEY WORDS: discharge documentation; hospital discharge quality; discharge summary; transitions in care; work processes.

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INTRODUCTION

The hospital discharge summary serves as the principal, and sometimes only, means of communicating a patient's care plan to the post-hospital team.¹ Only 3% of post-hospital providers receive discharge information via verbal communication,² and other means of written communication are not universally present.³ The Joint Commission (TJC) mandates that a discharge summary be produced for every patient by the hospital provider within 30 days of discharge,⁴ and include (1) reason for hospitalization; (2) procedures performed; (3) care, treatment, and services provided; (4) discharge condition; (5) information provided to the patient/family; and (6) attending physician signature.⁴ However, these components are not defined, and no further details are required by TJC.⁴ Experts advocate for more numerous and specific components, such as discharge medications, follow-up instructions, and diet, to better support patient safety during care transitions.^{1,5–11}

Hospital patients commonly discharged to sub-acute care settings, such as hip fracture and stroke patients,^{12,13} rely on

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the discharge summary to ensure appropriate care. Sub-acute care transitions are system-to-system transfers that usually result in completely new patient care teams.^{1,14} The discharge summary may be the only document accompanying the patient and is frequently the document from which sub-acute admission orders are directly transcribed.^{1,11,14} Since the attending physician for the sub-acute care stay may take up to 30 days to see a newly admitted patient,¹⁴ the discharge summary's content can dictate the patient's care for an extended period of time. Furthermore, since sub-acute care patients are often vulnerable, medically complex, and cognitively impaired,^{12,15} they are less likely to advocate effectively for themselves if poor discharge communication occurs.

Despite their importance, clinicians are rarely formally trained in discharge summary creation.¹⁶ Trainees are usually informally instructed during residency using a wide variety of clinical-work processes. This ad-hoc approach may reflect a lack of evidence-based discharge summary recommendations and poor awareness of the importance of post-hospital transitions. Studies of discharge summary content demonstrate frequent omissions of important details,^{1,5,7-11} yet no studies have rigorously examined the impact that various clinical-work processes, and provider training characteristics have on discharge documentation.

Our objective is to examine the relationship among clinical-work processes, provider training characteristics, and hospital discharge summary content to identify approaches that promote high-quality discharge documentation within a US hospital setting.

METHODS

Sample

We identified all patients 18 years and older discharged to sub-acute care [i.e., inpatient rehabilitation facilities, skilled nursing facilities (with or without rehabilitation units), and long-term care centers] with primary diagnoses of pelvis/hip/femur fracture or stroke, 2003–2005, from a Midwestern academic hospital. During the time frame of interest, discharge summaries at this hospital were dictated by a clinician (most often a resident), transcribed, sent to an attending physician for review/signature, and then sent to the post-hospital setting. Residents received no formal training in discharge summary completion. We defined primary diagnoses using the ICD-9 code within the first position on the hospital's billing records for the acute hospitalization. We used ICD-9 codes of 805.6, 805.7, 806.6, 806.7, 808, and 820 to identify pelvis/hip/femur fracture¹⁷ (hereafter 'hip fracture'), and codes of 431, 432, 434, and 436 to identify stroke.^{18,19} Data compiled by hospital case managers were used to identify patients discharged to sub-acute care. We reviewed the discharge summary for all 561 potentially eligible patients identified. Patients were excluded if they did not have a summary (n=5) or if, upon review of their summary, it was clear that they did not have a hip fracture or stroke (n=18), were discharged to home with or without home health care (n=10), or were discharged on hospice/comfort care (n=6). Thirteen patients experienced two qualifying hospitalizations, which we treated as separate events. The University of Wisconsin Institutional Review Board approved this study with a waiver of consent.

Provider Training Characteristics

Provider training characteristics were abstracted from publicly available data by a trained medical abstractor who did not have access to discharge summary content. Abstracted provider variables included name, post-graduate training level [i.e., intern (post-graduate year 1), resident (post-graduate years 2 and above), or faculty/staff], and specialty during the years 2003, 2004, and 2005. Provider specialties were grouped into categories of internal medicine, neurology, and surgery (i.e., neurological, ear/nose/throat, urology, orthopedic, cardiothoracic, plastic, and general surgery). Patients with discharge summaries created by providers of other specialties (i.e., anesthesia, dermatology, nuclear medicine, obstetrics-gynecology, ophthalmology, pathology, pediatrics, psychiatry, radiology, radiation oncology, rehabilitation medicine, and family medicine) were excluded (n=33), because these specialties cared for very few patients within the sample, and their practice styles/training may differ from the three main groups above. The final sample size was 489 (281 hip fracture, 208 stroke patients). A 10% random reabstraction by a second abstractor resulted in inter-rater agreements of 96% and 95% for training level and specialty, respectively. The provider data were linked to the discharge summary data using the name of the primary discharge summary author and the date of discharge.

Discharge Summary Documentation and Work Process Variables

Expert-recommended discharge summary components were identified via PubMed literature review of English-language publications containing components identified as 'recommended' or 'critical' for discharge summaries.^{1,5-11} These articles included one large systematic review and a number of other studies reflecting published opinions on discharge documentation originating from the hospitalist, primary care, geriatrics, and rehabilitation literature/disciplines. In some cases, components in one publication's list were more or less specific than another's, even though they described the same concept. In these cases we used the more specific recommendations. A total of 32 expert-recommended components were identified.

The expert-recommended discharge summary component list was organized into four categories to simplify the analysis and presentation (Table 1). The first category, 'Patient's Medical Course,' included components that describe the patient's history. The second, 'Functional and Cognitive Ability at Discharge,' included components that describe the patient's status at discharge. The third, 'Future Plan of Care,' included components that outline the next care steps, most of which result in specific orders (e.g., medications) within the sub-acute care facility.^{1,11,14} The fourth, 'Name and Contact Information,' included those components that allow for caregiver/provider contact. The latter two categories represent primarily "actionable" components, or those that directly inform sub-acute care orders, while the former represent primarily historical information about the patient.

The expert-recommended components identified did not have operationalized definitions published for abstraction purposes. Therefore, to increase abstraction reliability, conservative definitions for each component were arrived upon via consensus between two physicians and one geriatric nurse practitioner (see Appendix Table 1 available online). Using these definitions,

Table 1. Expert-Recommended Hospital Discharge Summary Components

Patient's medical course	Future plan of care
Dates of hospitalization ^{1,5}	Discharge medication list ^{1,5-8,10}
Primary diagnoses ^{1,6-9}	Diet ¹¹
Chief complaint ^{1,5,10}	Activity instructions ¹¹
History of present illness ^{1,5,7,10}	Therapy orders ¹¹
Admission physical exam ^{1,5,7,8,10}	Pending studies ^{1,6,7}
Drug allergies ^{6,8}	Code status/goals of care ⁶
Hospital course ^{1,5,6,10}	Communication of prognosis and/or diagnosis to patient/family ^{1,5,7,9,10}
Laboratory results ^{1,7,8,10}	Disposition ⁶
Hospital procedures ^{1,5,7,10}	With whom follow-up is to occur ^{1,5-8,10}
Hospital consults ^{1,5}	Time frame for follow-up ^{1,5-8,10}
Complications ^{7,10}	
Functional and cognitive ability at discharge	Name and contact information
Cognitive function on discharge ^{1,6}	Hospital physician/clinician ^{1,5,6}
Transfer methods/mobility aids ^{1,6,11}	Primary care practitioner ^{5,6}
Activities of daily living abilities ^{1,6,11}	Caregiver or guardian ⁶
Fall risk status ¹¹	

the presence/absence of each component was abstracted, as well as total page number and presence of an attending physician signature. In this case, a 'page' was a fully filled, typed paper page, like that typed by a transcriptionist.

We included clinical-work process characteristics to better understand provider-author behaviors and to examine potential mechanisms for optimizing discharge summary content. These characteristics included timing of summary completion (i.e., dictation) in relation to the day of discharge and to the specific time of day. These were calculated using the discharge date and the automated date/time of dictation stamp included on each summary.

Discharge Summary Abstraction Process

Two trained medical abstractors utilized the consensus definitions and a standardized approach to optimize reliability.²⁰ A 10% random re-abstraction was performed after every 100 discharge summaries. Abstractors convened monthly to discuss items with low reliability so consensus could be reached. This approach resulted in inter-rater agreement of >95% for 20 components, 85–94% for 8 components, and 71–76% for 4 components (i.e., complications, discharge condition, transfer methods, and activities of daily living abilities).

Analysis

Analyses were performed using SAS 9.2 (SAS Institute, Inc., Cary, NC) and STATA 11 (StataCorp LP, College Station, TX). Basic frequencies were calculated for all work process, provider, and discharge summary characteristics and for each component's prevalence. Inclusion scores, equaling the number of components present within each category, were calculated for each patient and averaged across the sample. We examined the relationship between work processes, provider characteristics, and the inclusion of components within each category using Poisson regression, which fit this skewed, non-overdispersed count data well per the likelihood-ratio test. We calculated robust estimates

of the variance and displayed data from unadjusted and adjusted models as incident rate ratios for clearer interpretation. All adjusted models included the work process categories and provider characteristics described above. Patient characteristics were not included in any models since expert-recommended discharge summary components are recommended for all patients, regardless of disease severity, comorbidity, or sociodemographics.^{1,5-11} All confidence intervals and p-values were tested for significance at $P < 0.05$.

RESULTS

Basic Characteristics

Discharge summaries were created using a wide variety of work processes and providers (Table 2). They were most often created by the day of discharge, although 14% were created more than 24 h after discharge. Dates of creation ranged from 11 days prior to 88 days after discharge. Time of day for completion varied, but most frequently fell between 7 a.m. and 11 p.m. Eighty percent of summaries were created by residents, with internal medicine, neurology, and surgery specialties nearly equally represented. Summaries averaged 3.5 pages (range 2 to 9 pages). The vast majority (95%) were reviewed/signed by the attending physician.

Prevalence of Expert-Recommended Components

Many actionable expert-recommended components were omitted in discharge summaries (Table 3). Within the 'future plan of care' category, discharge medication list, disposition, and instructions for medical follow-up were almost always included, but diet, activity instructions, and therapy orders were only included in about half of all summaries. Prognosis/diagnosis communication,

Table 2. Discharge Summary Work Process and Provider Characteristics for Patients Discharged to Sub-Acute Care Facilities (N=489)

Characteristic	Overall (N=489) % (N)
Work process characteristics:	
Discharge summary completion in relation to day of discharge:	
Completed >24 h before discharge	48 (236)
Completed on the day of discharge	38 (187)
Completed >24 h after discharge	14 (66)
Time of day discharge summary completed:	
7 a.m.–3 p.m.	57 (281)
3 p.m.–11 p.m.	38 (185)
11 p.m.–7 a.m.	5 (23)
Discharge summary author (provider) characteristics:	
Training year:	
Intern (postgraduate year 1)	10 (49)
Resident (postgraduate years 2 and above)	80 (379)
Faculty/staff	9 (44)
Specialty type:	
Internal medicine	35 (171)
Neurology	27 (130)
Surgery	38 (188)

patient goals (i.e., code status), and pending studies were included the least often at 15%, 7%, and 6%, respectively. Within the 'name and contact information' category, items that were automatically generated by the transcription system (i.e., hospital physician name) and PCP name/address were included regularly, while items that relied on manual entry (i.e., hospital clinician contact information and caregiver name/contact) were rarely included.

Overall, historical expert-recommended components were more often included than actionable components (Table 3). Twelve of the 13 expert-recommended 'patient medical course' components were included in at least 60% of summaries, with

Table 3. Prevalence of Expert-Recommended Components in Discharge Summaries of Patients Discharged to Sub-Acute Care Facilities (N=489)*

Components	Overall (N=489) % (N)
Actionable components	
Future plan of care	
Discharge medication list	99 (484)
Diet	68 (333)
Activity instructions	58 (282)
Therapy orders	56 (272)
Pending studies/laboratory tests	6 (27)
Goals/preferences (code status)	7 (35)
Communication of prognosis/diagnosis to patient/family	15 (72)
Disposition	90 (439)
Whom medical follow-up is to be with	91 (446)
Time frame for follow-up	83 (406)
Average future plan of care inclusion score [SD]—max. 10	5.7 [SD: 1.5]
Name and contact information	
Primary care provider name/address	88 (428)
Hospital physician name [†]	100 (489)
Hospital physician contact information	3 (14)
Family member/caregiver/guardian name	3 (15)
Family member/caregiver/guardian contact information	0
Average contact information inclusion score [SD]—max. 5	1.9 [SD: 0.5]
Historical components	
Patient's medical course	
Admission date [†]	100 (489)
Discharge date [†]	100 (489)
Primary diagnoses [†]	100 (489)
Chief complaint	98 (480)
History of present illness	95 (464)
Admission physical exam	61 (300)
Drug allergies	45 (221)
Hospital course [‡]	100 (489)
Laboratory results	64 (312)
Hospital procedures [‡]	99 (486)
Hospital consults [‡]	97 (476)
Complications	63 (307)
Discharge condition [‡]	86 (421)
Average medical course inclusion score [SD]—max. 13	11.1 [SD: 1.4]
Functional and cognitive ability at discharge	
Cognitive function on discharge	21 (102)
Transfer methods/mobility aids	47 (231)
Activities of daily living abilities	4 (17)
Fall risk status	7 (36)
Average functional/cognitive ability inclusion score [SD]—max. 4	0.8 [SD: 0.7]

*Values represent percents unless otherwise specified, [†]automatically generated by existing transcription system, [‡]Joint Commission-mandated discharge summary component

most reaching inclusion rates of >95%. In this category, only drug allergies were included in fewer than half of all summaries. Components in the 'functional and cognitive ability at discharge' category demonstrated much lower rates of inclusion. Information on transfer methods/mobility aids were included in slightly less than 50%, while cognitive function at discharge, activities of daily living, and fall risk status were included in only 21%, 4%, and 7% of all summaries, respectively.

Predictors for Inclusion of Actionable Expert-Recommended Components

A number of clinical-work process and provider characteristics were associated with the inclusion of actionable components (Table 4). After adjusting for all other characteristics, completion of the discharge summary >24 h after discharge predicted lower rates of inclusion for 'future plan of care' and 'name and contact information' components than if the discharge summary had been completed on the day of discharge. Additionally, discharge summaries completed by interns demonstrated lower adjusted rates of inclusion for 'future plan of care' components than those completed by residents. Inclusion also differed by specialty with neurologists including 'future plan of care' components less often than other specialties.

Predictors for Inclusion of Historical Expert-Recommended Components

Predictors of inclusion for historical components differed as compared to those for actionable components (Table 5). After adjusting for all other characteristics, components within the 'patient's medical course' category were more often included if an internist or neurologist (versus surgeon) authored the discharge summary, but were less often included if a faculty/staff was primary author. However, components within the 'functional and cognitive ability at discharge' category were less often included by internists and neurologists than by surgeons, but more often included if the summary was created >24 h prior to the patient's discharge.

DISCUSSION

Despite their role as a key communication tool during care transitions, discharge summaries within this study frequently omitted critical expert-recommended components, especially those within the actionable categories of 'future plan of care' and 'name and contact information.' Specific clinical-work processes (i.e., creating a summary >24 h after discharge) and provider characteristics (e.g., intern author) were associated with slightly greater omissions of actionable components. This is important because the omission of even one 'future plan of care' or contact information component may lead to critical problems in patient safety.

The high rate of omissions for actionable discharge summary components in this study is worrisome, especially in regards to sub-acute patient safety during care transitions. Sub-acute care patients are a vulnerable, medically complex, and often cognitively impaired population,^{12,15} frequently unable to advocate fully for themselves or to recall the specifics of their treatment plans during care transitions. The discharge summary may

Table 4. Predictors for Inclusion of Actionable Expert-Recommended Components in Discharge Summaries of Patients Discharged to Sub-Acute Care (N=489)

Characteristic	Future plan of care components			Name and contact information components		
	Unadjusted incident rate ratio [‡]	Adjusted* incident rate ratio [‡] (95% CI)	P-value	Unadjusted incident rate ratio [‡]	Adjusted* incident rate ratio [‡] (95% CI)	P-value
Work process characteristics:						
Discharge summary completion in relation to day of discharge:						
Completed >24 h before discharge	1.09	1.05 (0.99, 1.11)	0.08	0.97	0.98 (0.93, 1.03)	0.49
Completed on the day of discharge [†]	—	—	—	—	—	—
Completed >24 h after discharge	0.87	0.91 (0.84, 0.98)	0.02	0.88	0.93 (0.87, 0.99)	0.03
Time of day discharge summary completed:						
7 a.m.–3 p.m. [†]	—	—	—	—	—	—
3 p.m.–11 p.m.	1.01	0.98 (0.93, 1.03)	0.34	0.96	0.97 (0.93, 1.02)	0.26
11 p.m.–7 a.m.	1.03	1.00 (0.089, 1.11)	0.94	1.11	1.10 (0.98, 1.23)	0.12
Discharge summary author (provider) characteristics:						
Training year:						
Intern (postgraduate year 1)	0.94	0.90 (0.83, 0.97)	0.01	0.94	0.99 (0.92, 1.06)	0.74
Resident (postgraduate years 2 and above) [†]	—	—	—	—	—	—
Faculty/staff	1.00	0.92 (0.85, 1.00)	0.05	0.99	1.01 (0.93, 1.09)	0.87
Specialty type:						
Internal medicine	1.05	1.01 (0.96, 1.06)	0.8	1.14	1.11 (1.06, 1.17)	<0.001
Neurology	0.77	0.76 (0.72, 0.81)	<0.001	1.05	1.04 (0.99, 1.09)	0.13
Surgery [†]	—	—	—	—	—	—

*Adjusted for discharge summary completion in relation to the patient's day of discharge, the time of day that the discharge summary was completed, the provider's training year, and the provider's specialty type using a Poisson regression model with robust estimates of the variance. [†]Reference group.

[‡]Incident rate ratios are the ratio by which an incident rate (i.e., the number of expert-recommended items included in each category) for a group of interest is related to the incident rate for a reference group

serve as the only written documentation in the system-to-system transfer,^{1,11,14} transfers in which the vulnerable sub-acute care patient is often unaccompanied by a caregiver-advocate or clinician to provide continuity.^{1,14} Patients with

hip fracture and stroke, a focus of this study, represent two prevalent conditions within sub-acute care for which high-quality information carryover is essential to ensure appropriate continuity of therapies and treatment plans, especially for non-

Table 5. Predictors for Inclusion of Historical Expert-Recommended Components in Discharge Summaries of Patients Discharged to Sub-Acute Care (N=489)

Characteristic	Patient's medical course components			Functional and cognitive ability at discharge components		
	Unadjusted incident rate ratio [‡]	Adjusted* incident rate ratio [‡] (95% CI)	P-value	Unadjusted incident rate ratio [‡]	Adjusted* incident rate ratio [‡] (95% CI)	P-value
Work process characteristics:						
Discharge summary completion in relation to day of discharge:						
Completed >24 h before discharge	1.01	1.02 (0.99, 1.04)	0.26	1.43	1.32 (1.07, 1.63)	0.01
Completed on the day of discharge [†]	—	—	—	—	—	—
Completed >24 h after discharge	1.01	1.04 (1, 1.07)	0.05	0.82	0.85 (0.63, 1.14)	0.28
Time of day discharge summary completed:						
7 a.m.–3 p.m. [†]	—	—	—	—	—	—
3 p.m.–11 p.m.	1.01	1.00 (0.98, 1.02)	0.96	1.09	0.98 (0.81, 1.19)	0.83
11 p.m.–7 a.m.	0.99	0.96 (0.9, 1.03)	0.29	0.85	0.98 (0.63, 1.25)	0.51
Discharge summary author (provider) characteristics:						
Training year:						
Intern (postgraduate year 1)	0.99	1.02 (0.99, 1.06)	0.22	1.03	0.82 (0.63, 1.06)	0.13
Resident (postgraduate years 2 and above) [†]	—	—	—	—	—	—
Faculty/staff	0.91	0.92 (0.88, 0.96)	<0.001	1.42	1.15 (0.93, 1.43)	0.2
Specialty type:						
Internal medicine	1.07	1.08 (1.05, 1.11)	<0.001	0.88	0.80 (0.67, 0.96)	0.02
Neurology	1.05	1.04 (1.01, 1.07)	0.01	0.42	0.45 (0.33, 0.61)	<0.001
Surgery [†]	—	—	—	—	—	—

*Adjusted for discharge summary completion in relation to the patient's day of discharge, the time of day that the discharge summary was completed, the provider's training year, and the provider's specialty type using a Poisson regression model with robust estimates of the variance. [†]Reference group.

[‡]Incident rate ratios are the ratio by which an incident rate (i.e., the number of expert-recommended items included in each category) for a group of interest is related to the incident rate for a reference group

medication therapies like dysphagia treatments and activity/physical therapy plans.²¹ Poor discharge summary documentation of actionable components, such as diet and therapy orders, has the potential to directly impact the patient's plan of care/admission orders within the sub-acute care facility and may increase the risk for rehospitalization, excess sub-acute care nursing and therapy staff work load, and other negative post-hospital outcomes.²²⁻²⁴ This poor documentation may reflect a lack of appreciation for the needs of the sub-acute care patient and multi-disciplinary care team, the need for a standardized approach to discharge documentation, and the absence of regulation and assessment to ensure discharge documentation quality.^{1,6,16} Additional research is needed to better understand the connection between discharge documentation quality and patient/system outcomes.

We found both explicable and modifiable predictors of poor documentation for actionable components, especially the timing of discharge summary creation in relation to discharge and the author's training level. One would predict that discharge summaries created on or just before the time of discharge are authored by providers who have the details of the patient's active care at the forefront of their minds. These care details may become less memorable once the patient has been discharged. Interns likely include fewer components due to a lack of appreciation for transitional care needs. This suggests that efforts to improve the timeliness of discharge summary creation, improve residency transitional care education, and assign discharge documentation tasks to more experienced team members (i.e., residents) may be useful in improving the completeness of discharge communications.

The inclusion of expert-recommended components also differed depending on the author's specialty. Although some of the specialty-specific differences observed within this study likely reflect local-level or cohort-level residency training effects, they may also reflect particular biases of each specialty training experience. Nevertheless, the discharge summary components that we focused on within this study are recommended for all patients discharged to sub-acute care, regardless of their hospital course, intervention status, or physician type. Our findings would suggest that all specialties examined within this study would benefit from additional training in transitional care.

Since the discharge summary is the only mandated discharge document created in all hospital settings,¹ it could potentially serve as a platform for generalized improvements in discharge communication. Of course, the discharge summary is only one component of an optimal care transition—necessary, but not sufficient for high quality transitional care.^{6,25} Nevertheless, it is a universal tool that may be harnessed even in resource-poor settings as an initial step in the improvement of between-system communication. Currently, The Joint Commission mandates that each patient have a discharge summary created within 30 days of discharge.⁴ Our findings would suggest that this 30-day window may be too broad and may contribute to poor discharge documentation quality. Additionally, the movement towards electronic, highly templated discharge summaries holds promise for improved consistency, quality, and timeliness of creation, but only if the clinicians who create and use these templates are well versed in the transitional and informational needs of the patient, and of the physician and allied-health practitioners in the next setting of care.

Specific limitations must be recognized in the interpretation of this study's results. First, this is a study of one academic

medical center whose work processes may not fully reflect those of other academic centers or smaller community hospitals. However, many of the characteristics of the study hospital's discharge summary creation process and residency training process do mirror those commonly utilized at other hospitals. Second, we were unable to measure the workload under which each provider had to function. Increased levels of workload and work-burden can be associated with poorer discharge documentation quality.²⁶ Third, we do not attempt to assess the accuracy of the provider documentation, only the presence/absence of specific components. It is possible that some components included within study summaries were inaccurate and may have affected patient safety because of a communication error. However, by focusing on errors of omission, we remain consistent with the approach frequently utilized by regulatory entities.^{1,4} Next, the expert-recommended component list generated for this analysis was based on the published literature that primarily contains physician opinion. Few needs assessments of the other disciplines that utilize the discharge summary are available. It is possible that we have omitted or provided less detail on components essential to the work of these other non-physician providers, including nursing, speech and physical therapy, and social work. (Dysphagia therapy recommendations, in particular, are known to be poorly communicated within the discharge summary.²¹) The paucity of literature on this topic argues convincingly for the need of further study in this area.

In conclusion, discharge summaries of sub-acute care patients within this study frequently omitted expert-recommended components critical to communicating the patient's plan of care to the multi-disciplinary post-hospital sub-acute care team, with greater levels of omission seen when the document was created after the patient was discharged and when an intern was the primary author. This analysis suggests that greater attention to discharge documentation quality is needed and provides initial support for interventions to improve discharge documentation through optimized clinical-work processes, task assignments, and resident education. More research is needed to better understand the impact of discharge documentation quality on patient/system outcomes.

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