

Factors Contributing to Emergency Department Care Within 30 Days of Hospital Discharge and Potential Ways to Prevent It: Differences in Perspectives of Patients, Caregivers, and Emergency Physicians

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BACKGROUND: Identifying needs in patients who utilize the emergency department (ED) soon after being discharged from inpatient care is essential for planning appropriate care-transition interventions.

OBJECTIVE: To examine differences in stakeholder perspectives on reasons for ED care soon after hospital discharge and interventions that could be useful to prevent these ED visits.

DESIGN AND MEASUREMENTS: A convenience sample of 135 patients who presented to an urban teaching hospital ED <30 days after last hospital discharge, their caregivers (when present), and emergency physicians were administered identical structured surveys. Concordance and agreement rates between patient-physician and patient-caregiver dyads were calculated.

RESULTS: Concordances between stakeholders were poor, with weighted kappas ranging from 0.02 to 0.34 for patient-physician dyads and 0.03 to 0.68 for patient-caregiver dyads. Emergency physicians and caregivers identified factors between 1% and 42% of the time the patients did not. Less than half of any stakeholder could identify an intervention to potentially prevent the ED visit.

CONCLUSIONS: Our findings suggest the difficulty in forming unified definitions for root cause of ED visits soon after hospital discharge and support the use of multiple stakeholders in identifying appropriate targets for care-transition interventions. *Journal of Hospital Medicine* 2014;9:315–319. © 2014 Society of Hospital Medicine

Reducing hospital admissions within 30 days of inpatient discharge is the focus of numerous policies, incentives, and payment models, led by the Centers for Medicare & Medicaid Services.¹ Accordingly, care-transition programs have been developed and are found to be effective in reducing hospital readmissions.^{2,3} Interestingly, emergency department (ED) visits have not been included in this definition of readmission, no programs have focused specifically on reducing ED visits,⁴ and some have even increased ED visits.⁵

The prevalence and costs associated with ED care within 30 days of hospital discharge are not insignificant. Up to 24% of discharged patients present to the ED within 30 days, among whom only 50% are readmitted.⁶ ED care alone accounts for nearly 40% of all costs in the acute postdischarge period.⁷ This is in addition to the costs associated with readmissions from the ED, which are the result of disposition decisions made by ED clinicians.

To begin to build effective care-transition programs to reduce ED visits after inpatient discharge, greater understanding is needed on what factors influence the utilization of the ED and what potential interventions could have prevented them. Studies from inpatient populations have been successful in eliciting these factors through stakeholder interviews.^{8–10} In fact, the American College of Physicians and Society of Hospital Medicine emphasize involvement of the patient and family members in plans of care.¹¹ No prior studies have used stakeholders to inform care-transition models for patients who return to the ED within 30 days of inpatient discharge.

Therefore, the primary objective of this study was to collect various stakeholder perspectives to improve the understanding of factors associated with ED visits within 30 days of hospital discharge and identify potentially useful interventions to prevent them. We hypothesized that there would be significant discordances between patients, their caregivers, and emergency physicians. Findings from this study could inform an expanded framework for understanding the complexity of care needs after hospital discharge and suggest interventions to improve health outcomes and to reduce healthcare costs.

METHODS

Setting

The study took place in the ED of a 525-bed urban teaching hospital in Pittsburgh, Pennsylvania, with 55,000 annual ED visits and 26,137 hospital

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admissions per year. Overall demographics of patients presenting to this ED in 2012 were 82% white, 17% black, and 0.3% Asian. The institutional review board of the University of Pittsburgh approved this study.

Participants

Patients were eligible to participate if they: (1) had the capacity to complete an interview, as determined by the attending emergency physician based on their exam; and (2) presented to the ED within 30 days of a prior discharge from any affiliate hospital. Eligible participants were identified by a trained research associate (J.H.) on the day of the ED visit by screening the electronic medical record. We excluded 2 patients from analysis who had both been to the ED prior to a readmission and had already completed the survey in the last 30 days. Caregivers were eligible to participate if they: (1) were in the ED at the time of patient evaluation, and (2) were identified by participating patients. ED physicians were eligible to participate if they had seen and evaluated the enrolled patient and were the attending staff physician. Eligible caregivers and physicians underwent separate informed consent.

Development of Survey Instrument

A collaborative team of physicians and hospital administrators used a defined conceptual framework,⁹ literature search, and pilot administration to construct a survey to elucidate factors potentially contributing to ED visits within 30 days of hospital discharge and interventions that could have potentially prevented the ED visit. All participants (patients, caregivers, and physicians) were asked to complete the following questions: (1) “In your opinion, is your/the patient’s ED visit today directly related to your/their last hospitalization?” (2) “In your opinion, did any of the following contribute to your/the patient’s ED visit today?” (3) “In your opinion, which of the following could have prevented your/the patient’s ED visit today?” For questions 2 and 3, participants were asked to mark any and all prespecified options that apply, including “none of the above.” Participants were also given an “other” choice, which allowed them to provide open-ended answers. Across participant categories, the surveys differed only in the demographic questions. For patients, we asked questions regarding age, sex, race, highest education, relationship status, living situation, access to mobile communication, and chief complaint. For caregivers, we asked questions regarding age, relationship to patient, and frequency of patient contact. For physicians, we asked for sex and years of experience practicing emergency medicine. Prior to administration, the survey was pretested with 10 patients and revised to improve reliability and comprehensibility.

Survey Administration

Participants were screened and enrolled during 5- to 10-hour blocks that were chosen by the research

associate. Sampling was balanced between weekdays and weekends and between daytime and evening hours. The research associate typically took 5 minutes to conduct the survey in person with each participant and recorded all responses directly into an electronic file. The research associate made every effort to conduct all surveys in a private area without others present to reduce reporting biases.

Analysis

Participant descriptor and response profiles for perceived factors contributing to ED visits and interventions to potentially prevent them were first visually examined and described. Summary statistics were calculated and displayed as number (percentage) for categorical data or mean (standard deviation [SD]) for continuous data. For each individual item, patient-physician and patient-caregiver dyads were considered concordant if they both agreed on either the presence or absence of a given factor. To quantify dyad concordance, we calculated weighted κ statistics for concordance in each individual item and the agreement rate for concordance in each individual item.¹² To determine the relative additional contribution of caregivers and physicians, we calculated and displayed the percentage of factors identified by caregivers and physicians when the patient did not identify them. All data were analyzed using Stata 10.0 (StataCorp, College Station, TX).

RESULTS

Participant Characteristics

We surveyed 135 patients who had been discharged from the hospital within the last 30 days (Table 1). The number of days since discharge ranged from 1 to 30, with a mean of 12 (SD 9) days. Forty-four percent of cases presented to the ED within 7 days of the last discharge. Patients represented a wide age range from 18 to 96 years, with 61% under 65 years of age. Around a third (31%) were black, and 44% had no college education. Most (65%) were not currently married, the majority lived in the community (93%), and 63% live with at least 1 other person. Frequent ED chief complaints included chest pain or shortness of breath (24%), musculoskeletal pain (20%), and weakness (13%). To achieve 135 patient-physician dyads, we surveyed 22 unique emergency physicians, with each individual physician completing between 1 and 17 surveys and the median completion of 5 surveys. The mean number of years in practice was 12 (SD 9). We also surveyed 49 unique patient caregivers, who were between 20 and 86 years of age (mean age, 52 years [SD 14]). Eighty-eight percent of caregivers were family members, 8% friends, and 4% paid caregivers. The majority (63%) of caregivers lived with the patient and spent a mean of 11 hours (SD 7) per day with them.

TABLE 1. Study Participant Characteristics

Participant Characteristics	Value
Patient characteristic, N = 135	
Age, y, mean (SD)	59 (18)
Sex, female	74 (55)
Race	
Black	41 (31)
White	92 (69)
Asian	1 (1)
Highest education	
Less than high school	17 (13)
High school or GED	41 (31)
At least some college	75 (56)
Relationship	
Married	47 (35)
Single	58 (43)
Separated/widowed	29 (21)
Living situation	
Alone	40 (30)
With 1 other	49 (36)
With multiple family members	37 (27)
Nursing home/assisted living	9 (7)
Access to communication, personal mobile phone	110 (81)
Chief complaint	
Chest pain/shortness of breath	32 (24)
Musculoskeletal pain	27 (20)
Weakness	18 (13)
Abdominal pain/nausea/vomiting	14 (10)
Postoperative complaint	12 (9)
Headache	5 (4)
Other	27 (20)
Caregiver characteristic, N = 49	
Age, y, mean (SD)	52 (13)
Relationship to patient	
Family member	43 (88)
Friend	4 (8)
Paid caregiver	2 (4)
Frequency of patient contact	
Lives with patient	31 (63)
Waking hours per day with patient, mean (SD)	11 (7)
Physician characteristic, N = 22	
Sex	
Female	7 (30)
Male	15 (70)
Years practicing emergency medicine, mean (SD)	11 (9)

NOTE: All data are presented as number (%) unless otherwise specified. Abbreviations: GED, General Education Development test; SD, standard deviation.

Factors Contributing to Need for Acute Care Within 30 Days of Hospital Discharge

Overall, 89% of patients, 87% of emergency physicians, and 96% of caregivers identified at least 1 factor contributing to the return ED visit (Table 2). Patient-physician concordances in factors contributing to early ED care were generally poor, with weighted κ statistics ranging from 0.02 to 0.33 and agreement rates ranging from 59% to 93%. Patient-caregiver concordances in factors contributing to early ED care were generally better, with weighted κ statistics ranging from 0.05 to 0.68 and agreement rates ranging from 78% to 96%.

Both physicians and caregivers identified factors contributing to ED visits when patients did not

(Table 3). Specifically, they identified issues related to prior hospitalization contributing to the ED visit between 42% and 45% of the time when patients did not. Physicians identified progression of chronic disease or medical condition 38% of the time when the patient did not, compared to caregivers, who identified it 23% of the time patients did not. Physicians also indicated that not enough support at home as contributing to ED visits 11% of the time patients did not, compared to a 4% increase when caregivers were asked. Other reasons were reported through free text by 20% of patients, 16% of emergency physicians, and 22% of caregivers. Across all stakeholders, around one-third (27%–31%) of these other factors related to postoperative complications, and 27% to 44% related to the perception of being discharged too early.

Potential Ways to Prevent Early Acute Care Within 30 Days of Hospital Discharge

Overall, 56% of patients, 55% of emergency physicians, and 49% of caregivers selected at least 1 intervention that could have potentially prevented the ED visit. However, no single intervention was identified by more than one-fifth of participants (Table 2). Around 10% of patients identified either improved discharge instructions, review of medications, and follow-up care with primary care provider as potential ways to prevent ED visits. Physicians identified both follow-up with a primary care provider and specialist around 21% of the time as potential preventive interventions. Patient-physician concordances in potential ways to prevent ED care were extremely poor, with weighted κ statistics ranging from 0.08 to 0.19 and agreement rates ranging from 74% to 85%. Patient-caregiver concordances in potential ways to prevent ED care again were generally better, with weighted κ statistics ranging from 0.03 to 0.55 and agreement rates ranging from 82% to 94%.

Other potential interventions were reported by 16% of patients, 10% of emergency physicians, and 10% of caregivers. From patients, other interventions related to staying in the hospital longer on last admission and better medication instructions from last admission. Other interventions reported by physicians included home physical therapy, improved primary care provision, and more home support. Physicians, but not caregivers, more frequently identified potentially useful interventions when patients did not (Table 3). Other interventions reported by caregivers included staying in the hospital longer, improved patient activity, and better medications.

DISCUSSION

Several findings from this study can improve the understanding of what factors influence the utilization of the ED soon after inpatient discharge and what interventions could potentially prevent them.

TABLE 2. Stakeholder Perceptions and Concordances of Factors Contributing to Early Acute Care Visit and Potential Ways to Prevent It

	Patient Report, N = 135		Physician Report, N = 135		Caregiver Report, N = 49		Patient-Physician Concordance		Patient Caregiver Concordance	
	n	%	n	%	n	%	κ	Agreement %	κ	Agreement %
Factors contributing to early acute care										
Issues related to prior hospitalization	92	68	88	65	36	73	0.33	70	0.51	78
Progression of chronic disease or medical condition	56	41	60	44	22	45	0.15	59	0.58	80
Missed doses or not taking prescribed medications	9	7	7	5	2	4	0.34	93	0.3	92
Not enough support at home	7	5	15	11	2	4	0.02	85	0.05	90
Fall or unsteadiness when walking	12	9	6	4	4	8	0.05	88	0.65	96
Side effects of current medication	26	19	5	4	7	14	0.21	83	0.68	90
Potential ways to prevent early acute care visit										
Improved discharge care instructions	13	10	17	13	3	6	0.09	79	0.46	92
Review of medications	13	10	7	5	5	10	0.08	85	0.55	82
Home health visits	9	7	21	16	2	4	0.19	84	0.03	94
Follow-up appointment with primary care doctor	14	10	29	21	0	0	0.08	74	—	—
Follow-up appointment with specialist	10	7	28	21	5	10	0.05	75	0.33	88

NOTE: κ data represents the weighted kappa statistic.

Consistent with our hypothesis, there are significant discordances between patients, their caregivers, and emergency physicians. Additionally, emergency physicians and caregivers were able to identify factors and potential opportunities for prevention a significant, albeit variable, amount of time the patients did not. Perhaps not surprisingly, we found that across stakeholders, the majority of ED visits are perceived as related to issues from the prior hospitalization or progression of chronic disease or medical condition. Of some concern, we found that less than half of patients, physicians, and caregivers could identify an intervention to potentially prevent the ED visit.

The large discordances between patients' and physicians' perceptions in our study were similar to those found in prior studies from primary care.¹³⁻¹⁵ No prior study has examined discordances in emergency care or regarding perceptions about care-transition difficulties. Feigenbaum et al.¹⁰ interviewed patients, caregivers, and physicians to create composite definitions of potentially preventable readmissions. They did not, however, look at how these perceptions differ or describe the relative contribution of individual stakeholders to overall definitions. The discordances between patient and emergency physician perceptions may be due to a couple of potential causes. First, emergency physicians may have greater access to medical history data than patients, allowing them to develop more objective assessments. This is supported by our finding that physicians identified factors when patients did not. Second, patients may understand certain care-transition difficulties that physicians do not elicit from history taking. This may be especially apparent in the emergency setting, where physicians are time limited and do not have established care relationships with patients.

TABLE 3. Factors and Potential Ways to Prevent Early Acute Care Identified by Physicians and Caregivers When Not Identified by Patients

	If Patient Did Not Report	
	Physician Report	Caregiver Report
Factors contributing to early acute care		
Issues related to prior hospitalization	18 (42)	9 (45)
Progression of disease or medical condition	30 (38)	7 (23)
Missed doses or not taking prescribed medications	4 (3)	1 (2)
Not enough support at home	14 (11)	2 (4)
Fall or unsteadiness when walking	5 (4)	2 (4)
Side effects of current medication	1 (1)	0
Potential ways to prevent early acute care visit		
Improved discharge care instructions	16 (13)	1 (2)
Review of medications	7 (6)	2 (5)
Home health visits	17 (13)	2 (4)
Follow-up appointment with primary care doctor	25 (21)	0
Follow-up appointment with specialist	25 (20)	3 (7)

NOTE: Frequencies and percentages are reported as n (%).

The moderate agreement between patient and caregiver perceptions are similar to a couple of studies examining perceived quality of life among patients.^{16,17} These discordances can be due to a couple of potential causes. First, caregivers may witness deficits or transition difficulties that the patient may not. This may be particularly true for caregivers who are providing substantial support in managing the patient's healthcare or for patients with cognitive impairment. Second, caregivers may not know the patient history well enough to know what specific issues affect the patient. This would be likely when caregivers do not live with patients or serve a central role in caregiving.

The overwhelming perception that the majority of ED visits are related to issues from the prior hospitalization or progression of chronic disease or medical condition suggests that, by and large, acute care needs

soon after hospital discharges are not new unrelated medical issues, and thus theoretically could be predicted and prevented. This is consistent with prior prediction models showing that chronic medical comorbidities have strong associations with hospital readmission.^{18,19} It also supports probing care issues with patients prior to hospital discharge.²⁰

The finding that less than half of patients, physicians, or caregivers could identify an intervention to potentially prevent the ED visit echoes prior research, indicating that only a minority of readmissions may be truly preventable,²¹ and suggests that there may not be obvious needs that can be addressed to prevent acute care visits. An alternative interpretation is that the healthcare system does not currently have a suitable alternative to meet the perceived needs of patients. Despite this, patients occasionally perceived that better discharge instructions, review of medications, and sooner follow-up appointments with a primary care doctor could have potentially prevented their ED visit. This is consistent with numerous prior studies and supports better transition-of-care programs.

Our study had a small sample size, which results in wide confidence intervals on all point estimates of percentages, limiting the precision of our findings. No medical charts were reviewed to determine the medical reasons for the index admission, the prior course of care, or subsequent hospital course after emergency care, limiting our ability to link perceptions with actual past hospital experiences or compare differences in perceptions by subsequent readmission. Another limitation is a lack of generalizability of our findings to other patients, hospitals, or regions. Our patient population was largely white and English speaking only for participation in this study. Also, our hospital ED admits an average of 48% of patients, which is higher than most hospitals. We enrolled a convenience sample as opposed to a consecutive sample of patients due to limitations in research associate staffing, potentially biasing our sample. We attempted to minimize this bias by scheduling shifts across days and time periods. We did not systematically collect the number of patients or caregivers who refused participation, but believe that it was less than 5% of those approached. Other limitations include possible reporting biases associated with in-person interviews, which we attempted to minimize by conducting all surveys in private.

SUMMARY

Identifying needs in patients who utilize the ED soon after being discharged from inpatient care is essential

for planning appropriate care-transition interventions. Our findings suggest that multiple stakeholders may be necessary to fully elicit targets for effective care-transition programs.

Disclosure: Nothing to report.

References

1. Medicare Payment Advisory Commission. Payment policy for inpatient readmissions. In: Report to the congress: promoting greater efficiency in Medicare. Available at: http://www.medpac.gov/chapters/Jun07_Ch05.pdf. Accessed February 9, 2010.
2. Jack BW, Chetty VK, Anthony D, et al. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. *Ann Intern Med*. 2009;150(3):178–187.
3. Hasan O, Meltzer DO, Shaykevich SA, et al. Hospital readmission in general medicine patients: a prediction model. *J Gen Intern Med*. 2010;25(3):211–219.
4. Rennke S, Nguyen OK, Shoeb MH, Magan Y, Wachter RM, Ranji SR. Hospital-initiated transitional care interventions as a patient safety strategy: a systematic review. *Ann Intern Med*. 2013;158(5 pt 2):433–440.
5. Benbassat J, Taragin M. Hospital readmissions as a measure of quality of health care: advantages and limitations. *Arch Intern Med*. 2000;160(8):1074–1081.
6. Rising KL, White LF, Fernandez WG, Boutwell AE. Emergency department visits after hospital discharge: a missing part of the equation. *Ann Emerg Med*. 2013;62(2):145–150.
7. Vashi AA, Fox JP, Carr BG, et al. Use of hospital-based acute care among patients recently discharged from the hospital. *JAMA*. 2013;309(4):364–371.
8. Soler RS, Juvinya Canal D, Nogueer CB, Poch CG, Brugada Motge N, Del Mar Garcia Gil M. Continuity of care and monitoring pain after discharge: patient perspective. *J Adv Nurs*. 2010;66(1):40–48.
9. Kangovi S, Grande D, Meehan P, Mitra N, Shannon R, Long JA. Perceptions of readmitted patients on the transition from hospital to home. *J Hosp Med*. 2012;7(9):709–712.
10. Feigenbaum P, Neuwirth E, Trowbridge L, et al. Factors contributing to all-cause 30-day readmissions: a structured case series across 18 hospitals. *Med Care*. 2012;50(7):599–605.
11. Snow V, Beck D, Budnitz T, et al. Transition of care consensus policy statement, American College of Physicians-Society of General Internal Medicine-Society of Hospital Medicine-American Geriatric Society-American College of Emergency Physicians-Society of Academic Emergency Medicine. *J Gen Intern Med*. 2009;24(8):971–976.
12. Cicchetti DV, Feinstein AR. *J Clin Epidemiol*. 1990;43(6):551–558.
13. Starfield B, Steinwachs D, Morris I, Bause G, Siebert S, Westin C. Patient-doctor agreement about problems needing follow-up visit. *JAMA*. 1979;242(4):344–346.
14. Britt H, Harris M, Driver B, Bridges-Webb C, O'Toole B, Neary S. Reasons for encounter and diagnosed health problems: convergence between doctors and patients. *Fam Pract*. 1992;9(2):191–194.
15. Greene MG, Adelman RD, Charon R, Friedmann E. Concordance between physicians and their older and younger patients in the primary care medical encounter. *Gerontologist*. 1989;29(6):808–813.
16. Giovannetti ER, Reider L, Wolff JL, et al. Do older patients and their family caregivers agree about the quality of chronic illness care? *Int J Qual Health Care*. 2013;25(5):515–524.
17. Tamim H, McCusker J, Dendukuri N. Proxy reporting of quality of life using the EQ-5D. *Med Care*. 2002;40(12):1186–1195.
18. Kangovi S, Grande D. Hospital readmissions—not just a measure of quality. *JAMA*. 2011;306(16):1796–1797.
19. Allaudeen N, Vidyarthi A, Maselli J, Auerbach A. Redefining readmission risk factors for general medicine patients. *J Hosp Med*. 2011;6(2):54–60.
20. Moore C, McGinn T, Halm E. Tying up loose ends: discharging patients with unresolved medical issues. *Arch Intern Med*. 2007;167(12):1305–1311.
21. Donze J, Aujesky D, Williams D, Schnipper JL. Potentially avoidable 30-day hospital readmissions in medical patients: derivation and validation of a prediction model. *JAMA Intern Med*. 2013;173(8):632–638.