CLINICAL REVIEW

Contribution of Non-Medical Reasons to Readmissions on an Inpatient Geriatrics Service

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Introduction

Unplanned hospital readmissions, defined as an admission within 30 days of discharge from an acute care hospital, are common, costly, and may reflect deficiencies in patient care. In 2015, readmission rates for Medicare recipients, by state, ranged between 15.5-18.9%, and accounted for an estimated cost of more than $17 billion annually.[1]

Although many hospital readmissions are the result of new conditions that cannot be anticipated or prevented during the index or initial admission, others are due to adverse events following discharge. Examples include developing acute kidney injury after discharge following admission for congestive heart failure or taking incorrect medication doses. A quarter of recently discharged patients experience an adverse event with half of those events potentially preventable or ameliorable.[2] Accordingly, readmissions are being used as a proxy for poor quality and uncoordinated care.[3] In response to these observations, the Centers for Medicare and Medicaid Services (CMS) implemented the Readmissions Reduction Program, which reduces payments to hospitals with excess readmission rates for pneumonia, congestive heart failure, and myocardial infarction.[3] With these efforts, readmission rates fell by 8% nationally between 2010 and 2015.[1]

To effectively reduce hospital readmissions requires an understanding of the reasons why they occur. Some readmissions may be unrelated to the index admission such as development of a new medical problem. Other readmissions are due to seemingly immutable factors, such as progression of underlying chronic disease. In contrast, modifiable causes include medication errors on discharge, inadequate treatment of the initial presenting medical condition or active comorbidities, insufficient discharge instructions, uncoordinated transfer of care, discharge to an inadequate level of care, transportation barriers, and lack of timely primary and specialty follow up.[4] Complex social situations, patient or family refusal of services or recommended discharge level of care, literacy barriers, and noncompliance with treatment plans also contribute to readmissions, although they may be more difficult to modify. The contribution of these reasons have received little study to date.

Frail older patients hospitalized in a geriatrics special care inpatient unit, who have multiple comorbidities, complex social situations, and high custodial needs, are at high-risk for readmission. In this project, we examined medical, health system, and non-medical reasons resulting in patient readmission to a geriatric special care inpatient unit.

Methods

Study Population and Setting

This quality improvement project employed a case study methodology to review patients readmitted to a geriatrics special care inpatient unit. The project was undertaken as a quality improvement program and did not meet the criteria for Institutional Review Board review.

Design

We identified consecutive readmissions to the Santa Monica-UCLA Medical Center's Geriatrics Special Care Inpatient Unit during a nine-month period from June 13, 2013 through March 15, 2014. The Geriatrics Special Care Inpatient Unit is a 26-bed unit that has dedicated nursing, social work, rehabilitation therapy (i.e., physical, occupational, and speech), nutrition consultation, and case management staff. The medical staff includes a team of two faculty attending physicians, one nurse practitioner, and four resident physicians. An outpatient-based care coordinator facilitates discharges and mobilizes services to prevent readmissions. The vast majority of patients admitted to the Unit are primary care patients of the UCLA Geriatrics Practice (including those who receive primary care at SNFs), but the project included all patients admitted to the Unit regardless of their primary care provider (PCP).

Readmissions were identified by the nurse practitioner on the Unit who sent daily emails to the Medical Director of the Unit and project manager of this project listing new admissions, including readmissions. Readmissions within 30 days from and to other hospitals were not included as the information was not available. The readmissions included all causes including patients admitted under Observation status.

Phase 1

In the first phase (June 13, 2013 to September 14, 2013), 58 unique patients had 80 readmissions. For all of these re-admissions, the project manager or the outpatient-based care coordinator interviewed the attending physician who discharged the patient, the attending physician (with input from resident physicians) who readmitted the patient, the patient, family and home caregiver, the primary care physician or SNF physician, and the care coordinator. The interviews incorporated information provided during the daily interdisciplinary rounds that include the case manager, nurse practitioner, rehab professionals, and social worker. The interviews were completed during or soon after the readmission and conducted via phone, email, or in-person. The interviews were semi-structured and recorded on an instrument designed for the project. For every patient, not all of the informants were available or appropriate (e.g., if a patient was readmitted from a SNF, then the outpatient primary care physician might have had little insight into the cause of the readmission).

The interviews explored the medical and non-medical reasons for readmission, the adequacy of the discharge planning process, resources available at home, the ability to get help for emerging or escalating problems, and whether the person being interviewed felt that the readmission could have been avoided. Interviews were subsequently reviewed at weekly meetings with the investigators using a case-study approach that included reviewing notes, analyzing data, and formulating hypotheses.[5]

Phase 2

Based on the first phase findings, we created a readmission checklist to identify the reasons leading to readmission divided into three timepoints: issues at the point of discharge (eight reasons); issues with monitoring after discharge (nine reasons); and issues with SNF transitions (nine reasons). See Appendix. Based on Phase 1 experience, it was decided that the attending physician readmitting the patient was in the best position to complete the checklist as this physician had the most comprehensive data regarding the patient, being most closely involved with the details of the case at the time of assessment. For all readmitted patients from September 15, 2013 to March 15, 2014 (n=67), the readmitting physician was asked to identify a primary reason for readmission, other reasons contributing to the readmission and to determine whether 1) the readmitted patient was being admitted for the same or for a new admission diagnosis, 2) readmission was planned (e.g., to return for a procedure) or unplanned, and 3) readmission was avoidable or unavoidable.

To include all readmissions in the analysis, we re-coded data from the first phase (N=80) to fit the categories used in the second phase and tabulated the response categories. Some patients had more than one reason for a readmission, which led the total percentage in some response categories to be more than 100%. To address this, we asked respondents prospectively as part of the semi-structured interview format to indicate the most important reason for readmission. If there was disagreement amongst the respondents, the most important reason selected by the readmitting attending physician was designated the primary reason for readmission.

Data Analysis

The 30-day readmission rate was defined as the number of hospitalizations with at least one subsequent hospital stay within 30 days divided by the total number of hospitalizations between June 13, 2013 – March 15, 2014.[6]

Descriptive statistics about demographic characteristics of readmitted patients included age, gender, race/ethnicity, health insurance, prior hospitalizations in past year based on date of index admission, and prior Emergency Department (ED) visits in past year based on date of index admission.

Reasons for readmission were grouped into medical reasons (e.g., premature discharge from hospital) and non-medical reasons (e.g., caregiver unable to provide adequate care or make appropriate decisions), and the percentages in each category were then calculated. The non-medical reasons for readmissions in the three time points (at point of discharge, after discharge, and transition to SNF) overlapped and were collapsed into the following three categories: 1) disagreement between the patient, family and/or medical team about the care plan; 2) not enough care at home; and 3) transition/care coordination problems.

We calculated the percentages of readmissions due to new conditions. Differences in the percentage of readmissions for new versus existing conditions and for medical versus non-medical reasons were tested for significance using the Chi-square statistic (SAS version 9.3). In these analyses, we first used only data from readmitting physicians and then in a second analysis we included responses from other physicians when a response from the readmitting physician was not available. There were no differences in findings between the two analyses and the latter, which has a larger sample size is reported.

Results

During the nine-month period, 125 consecutive patients contributed to 176 readmissions with an overall readmission rate of 16%. Patient ages ranged from 67 to 103 years with a mean of 85.6 years (Table 1). The patients were predominately Caucasian (81%) and female (66%). Most patients were insured by fee-for-service Medicare (85%). The average number of prior hospitalizations for these patients in the preceding 12 months was 4.1 and ranged between 2-12. ED visits were frequent in this population with an average of 4.2 ED visits in the prior 12 months (range 0-14).

Infections were the most common diagnosis for admission and accounted for approximately a quarter of the index admissions (Table 2). Infections were defined as a disease condition caused by bacteria, viral, or fungal organisms that included antimicrobial treatment. The diagnosis was the same for the index admission and the readmission in 19% of the readmissions (33 readmissions).

During phase 1, admitting and discharge physicians, primary care physicians, care coordinators, and patients/family/caregivers noted many non-medical reasons for readmissions. These non-medical reasons fell into three general

categories: transition/care coordination problems; inadequate home care; and disagreement between the patient, family, and/or medical team about the care plan (Figure 1). Transition/care coordination reasons included inadequate communication between providers and patients/caregivers at the point of discharge, inadequate communication between discharge physicians and outpatient care teams at the point of transition, inability to visit a PCP and/or specialists in a timely manner, inability to obtain outpatient medical tests or procedures in a timely manner, and needing higher level case management (e.g., social worker, care coordinator, etc.) at the point of discharge. Inadequate care at home included the following: identification of insufficient amount of care at home at the time of discharge; a caregiver that is unable to provide adequate care or make appropriate decisions; and insufficient personal care at home that was unanticipated at discharge. Reasons falling under disagreement between the patient, family, and/or team included disagreement between the patient and family about the plan of care, family and/or patient misunderstanding the level of care and treatment needed, and unrealistic patient/family expectations.

Overall, the most common non-medical reasons for readmission were in the category of problems with transition/care coordination. However, the discharge attending physician from the index admission noted that the most common non-medical reason for readmission was related to patient/family conflicts. Overall, 52% of readmissions had a patient or family-related reason contributing to the readmission.

Physician respondents were asked to classify the readmissions as avoidable or unavoidable, whether it was due to non-medical or medical reason, and whether it was due to a new medical condition or the same medical condition. Overall, 45% of readmissions were considered to be avoidable. Both avoidable and unavoidable readmissions were approximately equally divided between medical and non-medical reasons for readmission and the differences were not significant (Table 3a). Unavoidable readmissions were more likely to be diagnosed with a new medical condition (78%) and avoidable readmissions were more likely to have the same medical condition as the prior admission (61%), $p = 0.002$ (Table 3b).

Discussion

This single institution retrospective project examined the reasons for readmission on an inpatient Geriatrics Special Care Unit. We found that over three-quarters of the readmissions were for new medical conditions unrelated to the prior medical condition for admission. Many of these readmissions were felt to be unavoidable, likely reflecting high-risk patients and in who were, in some cases, hospital-dependent.[7,8] The unavoidable readmissions were also commonly attributed to non-medical reasons such as having insufficient amount of care at home, misunderstandings between the patient and/or family with the providers regarding level of care needed, primary caregivers unable to provide adequate care and/or make appropriate decisions, or the patient and family disagreeing with each other about the plan of care.

Prior studies of reasons for readmission categorized the readmissions in terms of the primary discharge diagnosis but not by the specific reasons for readmission.[9,10] Forster *et al*[11] reviewed qualitative data of adverse events and categorized them as preventable, ameliorable, or neither. That study identified four areas that could be targets for reducing readmissions: evaluation of patients at the time of discharge; teaching patients about drug therapies, side effects, and what to do if specific problems develop; improving monitoring of therapies; and improving monitoring of patients' overall conditions. Our project builds upon these studies by focusing on a particularly high-risk population (patients had a mean of 4 readmissions in the previous year) and examined why the patients were readmitted from several perspectives, including the non-medical reasons. The current project assessed mismatched expectations between the patient and/or family and healthcare providers and potential avoidability of the readmissions. Although communication deficits with the PCPs and/or physicians providing care at SNFs (i.e., poor handoffs) at the time of hospital discharge may adversely affect patient care,[12] this was not noted by physicians to be a common contributing reason to readmissions in this project.

This project has a number of limitations. First, the project was conducted at a single unit in one institution and did not assess significant regional and hospital variations in readmission rates and practices.[5] Nevertheless, our focus on a particularly frail, older population at high risk for readmission provides insight into unique discharge needs that are not evident in healthier, younger patients with more functional reserve and less need for caregiver support. Second, responses from all respondents were not available for all readmissions. Additional reasons for readmission may have been missed. Third, as the project progressed, discharge attending physicians may have been more mindful of potential reasons for readmission and addressed them prior to discharge, which may have lowered readmission rates. However, many faculty attending physicians rotated through the service during the project period, which would make this less likely. Fourth, we were unable to adjust for co-morbidities and disease burden of the patients.

Although hospital readmissions of older persons may indicate poor quality and uncoordinated medical care, this project identified non-medical reasons that may be amenable to new approaches. Over 50% of the readmissions in our project had non-medical reasons contributing to the readmission. Unless the full range of reasons for readmission is considered with the indicated interventions deployed, attempts to reduce avoidable readmission rates will be only partially successful.

Tables and Figures

Table 1. Patient Demographic Characteristics, N=125 (June 3, 2013 through March 15, 2014)

Characteristics	
Age, (years) Mean (SD); Range	85.6 (7.4), 67-103
Gender Female Male	**N (%)** 83 (66) 42 (34)
Race/Ethnicity White or Caucasian Black or African American Asian or Pacific Islander Other	**N (%)** 102 (81) 12 (10) 7 (6) 4 (3)
Insurance Medicare FFS Medicare Advantage	**N (%)** 106 (85) 19 (15)
Prior hospitalizations, (past year from index admission) Mean (SD), Range	4.1 (2.2), 2-12
Prior hospitalizations in past year from index admission 0-3 4-6 7-9 10-12	**N (%)** 67 (54) 43 (34) 11 (9) 4 (3)
Prior ED visits, (past year from index admission) Mean (SD), Range	4.2 (2.8), 0-14
Prior ED visits in past year from index admission **0-3** **4-6** **7-9** **10-14**	**N (%)** **63 (50)** **42 (34)** **13 (10)** **7 (6)**

SD = Standard Deviation; ED = Emergency Department
Data presented as N (%) unless otherwise specified.

Table 2. Most Common Index Admission and Readmission Diagnosis (Dx), N=176.

Diagnosis	**Index Admission, N (%)**	**Readmission, N (%)**
Infection-Related Admission	**48 (27)**	**52 (30)**
Cellulitis	2	2
Diverticulitis	3	3
Infection, not otherwise specified	7	5
Pneumonia	12	15
Sepsis	10	18
Urinary tract infection/pyelonephritis	14	9
Cardiovascular-Related Admissions	**25 (14)**	**22 (13)**
Atrial fibrillation	5	4
Chest pain	6	8
Congestive heart failure	12	8
Peripheral vascular disease	2	2
Kidney-Related Admissions	**10 (6)**	**6 (3)**
Renal failure	10	6
Hematology/Oncology-Related Admissions	**8 (5)**	**13 (7)**
Anemia	3	8
Cancer	5	5
Neurology-Related Admissions	**3 (2)**	**6 (3)**
Altered Mental Status/Delirium	1	3
Dementia	2	3
Orthopedic-Related Admissions	**9 (5)**	**5 (3)**
Fractures	9 (5)	5 (3)
Gastrointestinal-Related Admissions	**11 (6)**	**7 (4)**
Cholecystitis	1	0
Constipation	1	2
Gastritis	1	0
GERD	1	1
GI Bleed	7	4
Pulmonary-Related Admissions	**13 (7)**	**6 (3)**
COPD	8	4
Pulmonary embolism	5	2

GERD = gastroesophageal reflux disease; GI = gastrointestinal; COPD = chronic obstructive pulmonary disease

Table 3a. Physician Perceptions of Medical versus Non-medical Reason for Readmission by Avoidable versus Unavoidable Readmission*

Reason	**Avoidable N (%)**	**Unavoidable N (%)**	**Total**
Medical	10 (43)	8 (42)	18
Non-medical	13 (57)	11 (58)	24
Total	23 (100)	19 (100)	42

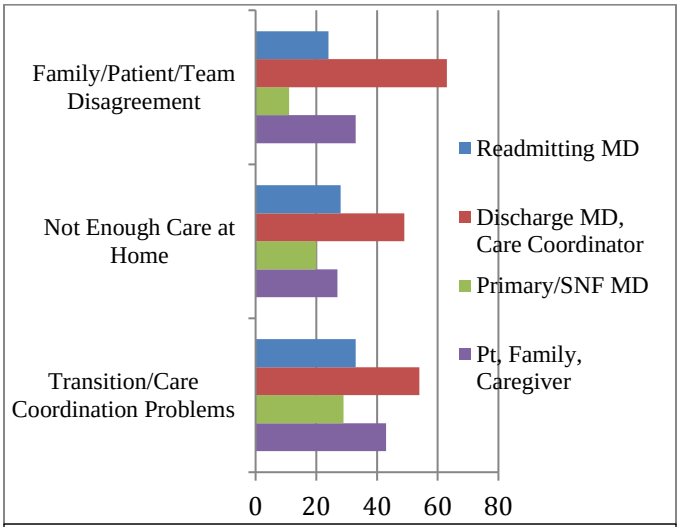
**Based on the 42 readmissions that had physicians answering both questions.*

Table 3b. New versus Same Admission Diagnosis by Physician's Perception of Avoidable versus Unavoidable Readmission*

Reason	Avoidable N (%)	Unavoidable N (%)	Total
New	9 (39)	29 (78)	38
Same	14 (61)	8 (22)	22
Total	23 (100)	37 (100)	60

**Based on the 60 readmissions that had physicians answering both questions.*

Figure 1. Most Common Non-medical Reasons for Readmission by Interviewee*



**Total percentage in each category and by each respondent group is greater than 100% because respondents could indicate more than one reason.*

Appendix

The following is a list of possible reasons for readmission, please indicate if any apply. If more than one reason, indicate predominant/most important reason with an *****.

Point of Discharge	**Yes**	**No**	**Comments-explain**
Unclear medication instructions			
Prior medication not restarted or dose changed			
Insufficient amount of care at home			
Premature discharge from hospital			
Family/patient misunderstanding regarding level of care/treatment needed			
Caregiver unable to provide adequate care/make appropriate decisions			
Family/Patient disagreements regarding care needed - mediation needed			
Needs high level care management (social worker, care coordination, etc)			
Monitoring after discharge	**Yes**	**No**	**Comments-explain**
Inadequate communication to transition care provider (SNF MD, PMD)			
Improper medication management			
Insufficient personal care available at home			
Patient/family contact information not reliable			
Timely labs/procedures/tests unavailable			
Unrealistic patient/family expectations			
Unable to see PCP within a reasonable time			
Required closer follow (specialists, Care Coordination)			
Transportation barriers			
SNF Transition	**Yes**	**No**	**Comments-explain**
Inadequate communication between hospital and SNF care provider teams			
Process for SNF admission from Outpatient setting too complicated/difficult			
SNF MD unavailable during weekend/late hours			
Inadequate availability of accurate diagnostic testing			
Premature discharge from SNF			
Inadequate availability of therapeutic treatments			

Inadequate discharge plan from SNF			
Unable to see PCP within a reasonable time after SNF discharge			
Inadequate communication between SNF and PCP care provider teams			
Other Reasons	**Yes**	**No**	**Comments-explain**
New unrelated condition			
Same Inadequate communication between hospital and SNF care provider teams			
Same condition			
Planned readmission			
Unavoidable readmission			
Other, specify:			

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