Published in final edited form as:

J Am Geriatr Soc. 2013 September ; 61(9): 1443–1448. doi:10.1111/jgs.12411.

Does Reducing Length of Stay Increase Rehospitalization Among Medicare Fee-for-Service Beneficiaries Discharged to Skilled Nursing Facilities?

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Abstract

Background/Objectives—Rehospitalizations are costly and pose risks for patients. Increased rates of rehospitalization have accompanied decreases in hospital length of stay, raising the possibility that these two trends are causally related. Our objective was to analyze the relationship between length of stay and rehospitalization.

Design—Retrospective cohort study.

Setting—6,537 hospitals nationwide from January 1999 through September 2005.

Participants—Medicare fee-for-service beneficiaries associated with 2,101,481 hospitalizations.

Measurements—30-day rehospitalization derived from Medicare hospital claims using the implementation of Medicare's post-acute care transfer policy as a quasi-experiment.

Results—Medicare's post-acute care transfer policy led to immediate declines in length of stay. When compared to a control group unaffected by the policy, one day decreases in length of stay were associated with absolute increases in 30-day rehospitalization of 1.56 percentage points (95% CI, 0.30 to 2.82) for acute myocardial infarction with major complications and 0.81 percentage points (95% CI, 0.03 to 1.60) for kidney or urinary tract infections without major complications. Patients hospitalized for acute myocardial infarction without major complications, heart failure,

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A podium presentation based on an abstract of the study was presented at the Academy Health Annual Research Meeting on June 26, 2012 in Orlando, Florida.

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Drafting of the manuscript: Unruh

Critical revision of the manuscript for important intellectual content: Unruh, Trivedi, Grabowski, Mor

Statistical analysis: Unruh

Obtained funding: Mor

Administrative, technical, and material support: Mor

Study supervision: Trivedi, Grabowski, Mor

Sponsor's role: The sponsor did not have a role in the design, methods, subject recruitment, data collection, analysis and preparation of the manuscript.

and kidney or urinary tract infections with major complications showed no increases in 30-day rehospitalization.

Conclusion—One day reductions in hospital length of stay are not consistently associated with increased rates of rehospitalization.

Keywords

Rehospitalization; length of stay; quality of care; Medicare; skilled nursing facilities

INTRODUCTION

Rehospitalizations cost the federal Medicare program approximately \$15 billion annually and expose patients to additional health risks.¹ For these reasons, providers and policy makers have engaged in substantial efforts to reduce rates of rehospitalization.^{2, 3}

Increased rates of rehospitalization over the last decade have been accompanied by decreases in hospital length of stay,^{2, 4, 5} raising the possibility that these two trends are related. However, empirical research on the causal effect of length of stay on rehospitalization is limited. Observational studies of the relationship are confounded by unobserved differences in severity of illness among patients.^{6–9} Sicker patients will have longer length of stay and are more likely to be readmitted irrespective of the number of days hospitalized. Conducting a randomized clinical trial would be unethical and clinically imprudent.

Medicare's post-acute care transfer policy offers an experiment to elucidate the relationship between length of stay and rehospitalization. The policy reduces payments for certain diagnosis related groups (DRGs) if a patient is discharged to Medicare-paid post-acute care following a hospitalization with length of stay at least one day less than the DRG's national geometric mean.¹⁰ Assuming that Medicare's post-acute care transfer policy would alter hospital length of stay, we used the date of the policy change as a quasi-experiment to examine the effect of changes in length of stay on the likelihood of rehospitalization in a national population of Medicare fee-for-service beneficiaries discharged to skilled nursing facilities.

Methods

Design Overview

We evaluated the effect Medicare's post-acute care transfer policy on length of stay and 30-day rehospitalization for discharges to skilled nursing facilities associated with the following DRGs: acute myocardial infarction with and without major complications (DRG 121 and DRG 122, respectively), heart failure and shock (DRG 127), and kidney or urinary tract infections with and without major complications (DRG 320 and DRG 321, respectively). These five DRGs were initially classified under the transfer policy beginning October 1, 2003. Within each DRG, we used the transfer policy as an exogenous source of variation to assess the effect of length of stay on 30-day rehospitalization. Septicemia (DRG 416) was the most common DRG not covered by the transfer policy at the time of the intervention that subsequently fell under the post-acute care transfer policy's domain after the study period. Patients hospitalized for septicemia exhibited similar trends in length of stay and utilization of post-acute services prior to the DRG's absorption by the transfer policy.¹¹ Based on these characteristics, septicemia patients (DRG 416) were used as a control group. All analyses were carried out using SAS version 9.2 and Stata SE version 11. The study was approved by the Human Research Protections Office of Brown University.

Data Source and Study Population

Our primary data source was a longitudinal data file composed of Medicare claims and enrollment files, the Minimum Data Set, the Online Survey Certification and Reporting System, and Area Resource File. The dataset includes Medicare hospital discharges to skilled nursing facilities for the period beginning January 1, 1999 through September 30, 2005, with many people observed more than once. We limited the study population to individuals age 65 and older in order to exclude younger beneficiaries that have very different characteristics and clinical needs than the general Medicare population.¹² Patients with hospital lengths of stay of 50 days or more were excluded to reduce the influence of outliers.

Variables

Our primary outcome measure was all-cause readmission within 30 days of hospital discharge (yes or no), regardless of whether the patient left the skilled nursing facility before rehospitalization. Explanatory variables included age, age-squared, race, any intensive care unit utilization during the hospital stay (yes or no), and indicators for levels of the Charlson Comorbidity Index.¹³ Other covariates included binary indicators for case DRGs, length of stay measured in days, and identifiers for the hospital and month/year of discharge. A dichotomous variable was used to identify whether hospital admissions occurred before or after implementation of Medicare's post-acute care transfer policy.

Statistical Analysis

We used assignment of each DRG to Medicare's post-acute care transfer policy as an instrumental variable for length of stay. Simple trend analyses may be biased due to unobserved differences in patients' severity of illness or underlying health. Conversely, the instrumental variable should be unrelated to unobserved patient characteristics and influence rehospitalization only through its effect on length of stay. The instrument was incorporated into a model with additional controls for gender, race, age, indicators for case DRGs, intensive care unit utilization, and Charlson Comorbidity Index. An interaction term for the case DRG indicator and the policy variable identified the primary effect of interest in each model. Variables for the Charlson Comorbidity Index were interacted with the instrument to test whether the policy had differential effects dependent on the complexity of a patient's condition. Additional indicators were included for the year and month of hospital discharge. These controlled for seasonal trends or other shocks occurring within specific time periods.

Our primary outcome measure was a dichotomous variable indicating rehospitalization within 30 days of discharge. We used two-stage least squares to obtain parameter estimates. In the first-stage, length of stay was regressed on the instrument and other independent variables. First-stage specifications were also estimated with hospital fixed effects to test the influence of unobserved time-invariant characteristics of the facilities. In the second-stage, observed length of stay for each discharge was replaced by the predicted value from the first-stage. We treated length of stay as a continuous measure in the first-stage and ignored the dichotomous nature of the dependent variable for 30-day rehospitalization in the second-stage. Results are reported with 95 percent robust confidence intervals adjusted for clustering at the level of the hospital-year.

Death is a competing outcome and its influence on the estimated effect of length of stay on hospital readmission needs to be considered.¹⁴ We conducted a sensitivity analysis using rehospitalization or death within 30 days of discharge (yes or no) as our outcome. The date of death was derived from the Medicare enrollment file. Employing the same analytical approach as in our initial analysis allowed us to determine if changes in length of stay were

associated with mortality, which could have influenced estimates of 30-day rehospitalization.

RESULTS

Table 1 indicates that the observable characteristics were similar for hospital discharges to skilled nursing facilities before and after each DRG was incorporated into Medicare's post-acute care transfer policy. Similar to previous nationwide studies of Medicare rehospitalizations, the percentage of racial minorities rose in the post-policy period for all groups,^{2, 4} with the exception of black patients with kidney or urinary tract infections with major complications. Use of intensive care units increased for all DRGs apart from acute myocardial infarction without major complications. Consistent with national trends for comorbid illness, the Charlson Comorbidity Index increased modestly for all five DRGs in the post-policy period.⁴

The minimum length of stay thresholds specified by Medicare's post-acute care transfer policy led to decreases in length of stay for our case DRGs (Figure 1). First-stage model estimates of the policy's effect on length of stay revealed declines of 0.17 days (95% confidence interval [CI], -0.27 to -0.07) for acute myocardial infarction with major complications, 0.32 days (95% CI, -0.47 to -0.16) for acute myocardial infarction without major complications, and 0.27 days (95% CI, -0.35 to -0.20) for heart failure and shock. Kidney or urinary tract infections with and without major complications had declines of 0.20 days (95% CI, -0.27 to -0.13) and 0.19 days (95% CI, -0.30 to -0.09), respectively. First-stage models incorporating hospital fixed effects were not substantially different. Length of stay for our control group of patients with septicemia was not affected by the policy (Figure 2).

The instrumental variable regression estimates shown in Figure 3 indicate increases in 30-day rehospitalization associated with the introduction of the transfer policy for two of the five case DRGs. A one day decrease in length of stay was associated with an absolute increase in 30-day rehospitalization of 1.56 percentage points (95% CI, 0.30 to 2.82) for acute myocardial infarction with major complications and 0.81 percentage points (95% CI, 0.03 to 1.60) for kidney or urinary tract infections without major complications. Patients in the highest category of the Charlson Comorbidity Index were less likely to be rehospitalized following declines in length of stay (Figure 4).

We also examined the percentage of discharges that did not meet the minimum length of stay thresholds in the year prior to, and the year following, implementation of the transfer policy. Early discharges decreased from 6.19 percent in pre-policy period to 5.97 percent ($P = 0.03$) in the post-policy period for acute myocardial infarction with major complications. For patients with acute myocardial infarction without major complications, the difference in the percentage of early discharges was statistically insignificant between the two periods. Discharges not meeting the policy's length of stay thresholds increased in the other three case DRGs. Among heart failure patients, early discharges increased from 35.38 percent in the year leading up to the policy change to 36.58 percent ($P < 0.001$) in the following year. For those treated for kidney and urinary tract infections with and without major complications, early discharges rose from 44.19 percent to 45.02 percent ($P < 0.001$) and 40.83 percent to 42.77 percent ($P = 0.01$), respectively.

Estimates from our sensitivity analysis showed that a one day reduction in length of stay was associated with an absolute increase of 0.83 percent (95% CI, -0.14 to 1.80) in death or rehospitalization for kidney or urinary tract infections without major complications. None of the estimates for our other case DRGs showed a statistically significant effect. Additionally,

patients in the highest category of the Charlson Comorbidity Index in each DRG exhibited a non-differential risk of death or rehospitalization with our composite outcome following implementation of the policy.

DISCUSSION

Implementation of Medicare's post-acute care transfer policy led to declines in hospital length of stay for all of our case DRGs, but the effects on 30-day rehospitalization among patients discharged to skilled nursing facilities were inconsistent. Patients hospitalized for acute myocardial infarction with major complications and kidney or urinary tract infections without major complications were at greater risk of rehospitalization following declines in length of stay. Rehospitalization was unaffected by reduced length of stay for those with acute myocardial infarction without major complications, heart failure, and kidney or urinary tract infections with major complications. Estimates for patients with higher scores on the Charlson Comorbidity Index in our primary analysis indicated a reduced likelihood of rehospitalization for these groups following implementation of the policy. In our sensitivity analysis using a composite outcome for death or rehospitalization within 30 days, the estimated effect of a decline in length of stay was significant for patients with kidney or urinary tract infections without major complications, but not for the other case DRGs. Furthermore, the risk of readmission was non-differential between levels of the Charlson Comorbidity Index in our sensitivity analysis, indicating that estimates for the most acute patients may be unstable.

Despite inconsistent effects on rehospitalization, our findings demonstrate that policy makers and insurers must be conscious of incentivizing universal reductions in length of stay. For example, without prior guidelines in place, providers may have perceived the minimum length of stay requirements imposed by Medicare's post-acute care transfer policy as a new floor, creating an impetus to reduce time to discharge. Moreover, the structure of payments established by the policy could have increased the incentive for early discharge and greater utilization of our case DRGs. For discharges that did not meet minimum length of stay thresholds, Medicare paid twice the per diem for the first day of care and the per diem for each additional day.¹⁰ If the larger payments for the first day of care led to higher marginal profits, providers may have sought to discharge patients earlier and possibly increase the volume of these DRGs following implementation of the policy.

We found mixed results when comparing the proportions of early discharges among our case DRGs before and after the transfer policy was implemented. The proportion of early discharges did not increase for patients with acute myocardial infarction in the post-policy period. This was not the case among individuals treated for heart failure and kidney or urinary tract infections where there was a higher likelihood of early discharge after these DRGs were incorporated into the policy. If providers were reacting to the marginal profit associated with first-day payments, the differential changes in the percentage of discharges not meeting the minimum length of stay thresholds among our case DRGs may reflect the financial benefit associated with early discharge for each condition. However, as discussed in more detail below, we found no apparent changes in volume associated with the implementation of the policy.

Our study has important limitations to consider. First, the sample was limited to Medicare discharges to skilled nursing facilities. If Medicare's post-acute care transfer policy led to changes in the volume or case-mix of discharges to skilled nursing facilities, our results may be biased. We found no evidence of discontinuous changes in the frequency of our case DRGs or the complexity of patients relative to other discharges in our sample. Additionally, we examined the volume of our case DRGs among all Medicare discharges before and after

the policy change using data from the Nationwide Inpatient Sample¹⁵, Healthcare Cost and Utilization Program, Agency for Healthcare Research and Quality.¹⁶ We found no trend breaks associated with the policy change among the broader population of Medicare hospitalizations. The use of home health care services following discharge from skilled nursing facilities could influence the risk of hospital readmission. However, in order to affect our estimates, differences in the use of home health care would have needed to coincide with implementation of the transfer policy. Moreover, a recent study examining the relationship between length of stay and rehospitalization of patients receiving care in Veterans Affairs hospitals had results similar to those we found among Medicare discharges to skilled nursing facilities.¹⁷ Steady declines in length of stay and annual increases of one to two percentage points in rehospitalization rates among patients discharged to skilled nursing facilities present an additional limitation.³ The variance introduced by these trends may make accelerated rates of rehospitalization associated with reduced length of stay difficult to detect. Lastly, closer case management or the use of hospice care among the sickest patients could potentially explain some of the differences in estimates associated with patients in the highest category of the Charlson Comorbidity Index in our primary and sensitivity analyses. However, this would require differential use of these services to coincide with the implementation of Medicare's post-acute care transfer policy. Although this is possible, we are unaware of any concurrent policy changes that would have led to differences in the use of these services among patients with the highest scores from the Charlson Comorbidity Index.

Despite recent studies noting that increases in rehospitalization have coincided with decreases in length of stay over the last decade,^{2, 4, 5} our results do not indicate a causal relationship between these trends. This suggests that case-mix severity and factors associated with quality of care are likely responsible for increasing rates of rehospitalization. These may include inadequate transitional care and coordination of services,^{18, 19} a lack of access to outpatient services following hospital discharge,²⁰ as well as conflicting state and federal policies that may increase hospitalizations.^{21–24} Our findings reveal potential inefficiencies in care and imply that some hospitals may be able to discharge patients earlier without deleterious consequences. However, it is not clear if additional broad reductions in length of stay, such as those due to bundling of payments or penalties for early discharge, could be made without negatively affecting the quality of care.

Acknowledgments

This research was supported by the Health Assessment Laboratory (Alvin R. Tarlov and John E. Ware Jr. Doctoral Dissertation Award to Mark Aaron Unruh), the National Institute on Aging (Program Project Grant #P01AG027296, P.I. Vincent Mor), and the Robert Wood Johnson Foundation (Grant #64435, P.I. Vincent Mor).

Potential Conflict of Interest

Dr. Vincent Mor is a co-founder of PointRight (formerly LTCQ, Inc.) and currently serves as a member of its Board of Directors. During the previous 36 months, Dr. Mor has also been a member of the boards of HCRManorCare, NaviHealth, Tufts Health Plan Foundation, and Hospice Care of Rhode Island. He has also been a consultant for Abt Associates, Research Triangle Institute, Welsh Carson Investment Co., and Alliance for Long Term Care Quality.

REFERENCES

1. Report to Congress: Promoting Greater Efficiency in Medicare. Washington, D.C.: Medicare Payment Advisory Committee; 2007.
2. Bueno H, Ross JS, Wang Y, et al. Trends in length of stay and short-term outcomes among Medicare patients hospitalized for heart failure, 1993–2006. *JAMA*. 2010; 303:2141–2147. [PubMed: 20516414]

3. Mor V, Intrator O, Feng Z, et al. The revolving door of rehospitalization from skilled nursing facilities. *Health Affairs*. 2010; 29:57. [PubMed: 20048361]
4. Cram P, Lu X, Kaboli PJ, et al. Clinical characteristics and outcomes of Medicare patients undergoing total hip arthroplasty, 1991–2008. *JAMA*. 2011; 305:1560–1567. [PubMed: 21505134]
5. Cram P, Lu X, Kates SL, et al. Total knee arthroplasty volume, utilization, and outcomes among medicare beneficiaries, 1991–2010 knee arthroplasty volume, use, and outcomes. *JAMA*. 2012; 308:1227–1236. [PubMed: 23011713]
6. Cowper PA PhD, Peterson M, Eric D, et al. Impact of early discharge after coronary artery bypass graft surgery on rates of hospital readmission and death. *J Am Coll Cardiol*. 1997; 30:908–913. [PubMed: 9316517]
7. Bohmer RMJ, Newell J, Torchiana DF. The effect of decreasing length of stay on discharge destination and readmission after coronary bypass operation. *Surgery*. 2002; 132:10–15. [PubMed: 12110788]
8. McCormick D, Fine MJ, Coley CM, et al. Variation in length of hospital stay in patients with community-acquired pneumonia: Are shorter stays associated with worse medical outcomes? * 1. *Am J Med*. 1999; 107:5–12. [PubMed: 10403346]
9. Cleary PD, Greenfield S, Mulley AG, et al. Variations in length of stay and outcomes for six medical and surgical conditions in Massachusetts and California. *JAMA*. 1991; 266:73. [PubMed: 2046132]
10. Medicare program; changes to the hospital inpatient prospective payment systems and fiscal year 1999 rates--HCFA. Final rule. *Fed Regist*. 1998; 63:40954–41131. [PubMed: 10181718]
11. Medicare program; changes to the hospital inpatient prospective payment systems and fiscal year 2006 rates/ Final rule. *Fed Regist*. 2005; 70:47277–47707. [PubMed: 16097095]
12. Foote SM, Hogan C. Disability profile and health care costs of Medicare beneficiaries under age sixty-five. *Health Aff (Millwood)*. 2001; 20:242–253. [PubMed: 11816665]
13. Quan H, Sundararajan V, Halfon P, et al. Coding algorithms for defining comorbidities in ICD-9-CM and ICD-10 administrative data. *Med Care*. 2005; 43:1130–1139. [PubMed: 16224307]
14. Gorodeski EZ, Starling RC, Blackstone EH. Are all readmissions bad readmissions? *New England Journal of Medicine*. 2010; 363:297–298. [PubMed: 20647209]
15. Kahn KL, Keeler EB, Sherwood MJ, et al. Comparing outcomes of care before and after implementation of the DRG-based prospective payment system. *JAMA*. 1990; 264:1984–1988. [PubMed: 2120477]
16. Healthcare Cost and Utilization Project (HCUP). Rockville, Maryland: Agency for Healthcare Research and Quality; HCUP Nationwide Inpatient Sample (NIS); p. 2000-2006.
17. Kaboli PJ, Go JT, Hockenberry J, et al. Associations between reduced hospital length of stay and 30-day readmission rate and mortality: 14-year experience in 129 Veterans Affairs hospitals. *Annals of internal medicine*. 2012; 157:837–845. [PubMed: 23247937]
18. Naylor MD, Aiken LH, Kurtzman ET, Olds DM, Hirschman KB. The importance of transitional care in achieving health reform. *Health Affairs*. 2011; 30:746–754. [PubMed: 21471497]
19. Boutwell AE, Johnson MB, Rutherford P, et al. An early look at a four-state initiative to reduce avoidable hospital readmissions. *Health Affairs*. 2011; 30:1272–1280. [PubMed: 21734200]
20. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med*. 2009; 360:1418–1428. [PubMed: 19339721]
21. Grabowski DC, Feng Z, Intrator O, et al. Medicaid Bed-Hold Policy and Medicare Skilled Nursing Facility Rehospitalizations. *Health services research*. 2010
22. Grabowski DC. Medicare and Medicaid: Conflicting Incentives for Long-Term Care. *Milbank Quarterly*. 2007; 85:579–610. [PubMed: 18070331]
23. Intrator O, Grabowski DC, Zinn J, et al. Hospitalization of nursing home residents: The effects of states' Medicaid payment and bed-hold policies. *Health services research*. 2007; 42:1651. [PubMed: 17610442]
24. Unruh MA, Grabowski DC, Trivedi AN, et al. Medicaid Bed-Hold Policies and Hospitalization of Long-Stay Nursing Home Residents. *Health Serv Res*. 2013 Mar 23. [Epub ahead of print.]

Figure 1.

Adjusted* mean lengths of stay for case DRGs.

* Adjusted for policy status, age, gender, race, ICU use, Charlson Comorbidity Index, and month/year of discharge.

Note: DRG 121 - Acute myocardial infarction with major complications

DRG 122 - Acute myocardial infarction without major complications

DRG 127 - Heart failure and shock

DRG 320 - Kidney or urinary tract infections with major complications

DRG 321 - Kidney or urinary tract infections without major complications

Figure 2.

Risk adjusted mean length of stay for septicemia discharges pre/post implementation of Medicare's post-acute care transfer policy.

*Adjusted for age, gender, race, and Charlson Comorbidity Index.

Figure 3.

Instrumental variable estimates of the effect of a one day decline in length of stay on 30-day rehospitalization (95% robust confidence intervals).

Note: DRG 121 - Acute myocardial infarction with major complications

DRG 122 - Acute myocardial infarction without major complications

DRG 127 - Heart failure and shock

DRG 320 - Kidney or urinary tract infections with major complications

DRG 321 - Kidney or urinary tract infections without major complications

Figure 4.

Instrumental variable estimates of the effect of a one day decline in length of stay on 30-day rehospitalization among patients with the highest Charlson Comorbidity Index (95% robust confidence intervals).

Note: DRG 121 - Acute myocardial infarction with major complications

DRG 122 - Acute myocardial infarction without major complications

DRG 127 - Heart failure and shock

DRG 320 - Kidney or urinary tract infections with major complications

DRG 321 - Kidney or urinary tract infections without major complications

Table 1

Characteristics of discharges pre/post policy implementation.

	Acute myocardial infarction with major complications		Acute myocardial infarction with no major complications		Heart failure and shock		Kidney/UT infections with major complications		Kidney/UT infections with no major complications		Septicemia	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
<i>N</i>	184,203	83,930	33,097	12,920	539,334	255,800	332,773	171,359	34,334	17,563	272,735	163,433
Mean age (yr)	83.4	83.8	82.4	83.0	83.1	83.3	83.3	83.2	83.4	83.3 (NS)	81.9	81.6
Male (%)	33.7	34.7	34.0	33.2	30.3	31.6	26.1	25.7	23.8	22.4	35.6	37.9
Race (%)												
Black	7.0	7.8	7.4	8.3	9.4	10.0	13.0	12.6	10.5	10.6	14.5	14.8
White	90.4	89.2	89.9	88.5	8.8	8.7	83.8	83.9	86.5	85.9 (NS)	81.9	80.9
Other race	2.2	2.8	2.4	2.9	2.1	2.4	2.8	3.2	2.6	3.2	3.2	4.0
Unknown race	0.5	0.3	0.3	0.3	0.4	0.3	0.5	0.3	0.4	0.2	0.4	0.3
ICU use (%)	43.7	46.1	64.4	61.4	38.5	42.3	11.0	13.7	6.2	8.0	26.1	34.9
Mean Charlson	3.1	3.1	2.2	2.2	2.5	2.6	1.5	1.5	0.8	0.8	1.7	1.7

NS: Difference not statistically significant at the 5 percent level.