

An Opportunity to Improve Medicare's Planned Readmissions Measure

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In the Hospital Readmission Reduction Program (HRRP), the Centers for Medicare & Medicaid Services (CMS) utilizes a planned/unplanned algorithm to prevent hospitals from being penalized for scheduled rehospitalizations. We evaluated version 3.0 of the CMS planned readmission algorithm and hypothesized that some readmissions categorized as planned by the HRRP algorithm may actually be unplanned. We identified 143,054 index admissions and 16,116 thirty-day readmissions for 131 hospitals. Only 1252 readmissions were considered planned according to Medicare's

readmission algorithm. The majority of these planned readmissions (723 [57.8%]) had an "emergent" or "urgent" admission type listed on the readmission claim, and many (513 [41.0%]) had emergency department charges, suggesting unanticipated returns to the hospital. HRRP should consider using the admission type variable and/or the presence of emergency department charges as a source of information when determining whether a readmission is planned or unplanned. *Journal of Hospital Medicine* 2017;12:840-842. © 2017 Society of Hospital Medicine

Readmissions result in \$41.3 billion in annual healthcare expenses.¹ As a result of the Affordable Care Act, Centers for Medicare & Medicaid Services (CMS) implemented the Hospital Readmission Reduction Program (HRRP) to reduce expenditures and improve quality associated with hospital care.²⁻⁵ The HRRP monitors readmission rates for pneumonia, congestive heart failure (CHF), acute myocardial infarction (AMI), chronic obstructive pulmonary disease (COPD), coronary artery bypass graft (CABG), and joint replacement. Hospitals are penalized for excess readmissions that occur following any of these index admissions. However, some readmissions within 30 days of an index admission are planned. For example, patients may have scheduled admissions for chemotherapy visits or may have prescheduled elective surgeries that happen to fall within a 30-day post-discharge window. Furthermore, even unplanned readmissions may not be a marker of suboptimal care.⁶ To prevent penalization for planned readmissions, CMS developed an algorithm to exclude planned readmissions from the HRRP.⁷

Few studies have investigated the planned readmissions in the HRRP since Horwitz and colleagues⁷ developed the algorithm with the assistance of a technical expert panel and validated it by reviewing charts in 2 healthcare systems comprising 7 hospitals. Most studies focus on unplanned readmissions.^{8,9} We build on this work by studying readmissions for 131 hospitals and using administrative claims to deter-

mine whether the algorithm could be improved. Specifically, we examined planned readmissions after the conditions included in the HRRP and determine whether they occurred under elective, urgent, or emergent circumstances. The goal is to assess whether the algorithm may misclassify some readmissions as planned even though the readmission is unanticipated. We hypothesize that some readmissions considered planned by the HRRP will occur under emergent circumstances. Our findings will provide more nuanced insights regarding planned readmissions and potentially provide a mechanism to identify potentially misclassified readmissions without administrative burden.

METHODS

We analyzed Medicare claims from 2011 to 2015 for beneficiaries in Michigan who had index admissions for pneumonia, CHF, AMI, COPD, CABG, and joint replacement. Exclusion criteria were as follows: patients who were not continuously enrolled in Medicare Part A and B, had health maintenance organization coverage, were transferred to another hospital during the index admission, or received Medicare because of end-stage renal disease or disability. Patients with hip fractures were excluded because the HRRP readmission algorithm only includes elective, unilateral, total hip arthroplasties. Transfer patients were excluded because these patients are excluded from the HRRP readmission algorithm. We also excluded patients who died within 90 days of their index admission because these patients are often outliers in regards to healthcare utilization. The institutional review board at our health system deemed this study exempt from review.

For each hospital and each condition, we calculated 30-day readmission rates by identifying inpatient claims that occurred following discharge from the index admission. For patients who had multiple readmissions, we only considered

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TABLE 1. Total and Planned Readmissions in Michigan Hospitals, by Condition

Condition	Total Index Admissions	Total Readmissions	Planned Readmissions
Pneumonia	26,419	3137 (11.9%)	181 (5.8%)
AMI	19,981	3023 (15.1%)	474 (15.7%)
CHF	27,720	4514 (16.3%)	391 (8.7%)
COPD	24,059	3174 (13.2%)	152 (4.8%)
Joint	44,875	2268 (5.1%)	54 (2.4%)
Total	143,054	16,116 (11.3%)	1252 (7.8%)

NOTE: Abbreviations: AMI, acute myocardial infarction; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; Joint, joint replacement.

the first readmission, as this follows the HRRP method. All readmissions were credited to the hospital where the index admission occurred.

To calculate 30-day planned readmission rates, we examined all readmissions and identified those deemed planned by version 3.0 of the CMS readmissions algorithm.¹⁰ We characterized these planned readmissions by examining the admission type variable and the presence or absence of emergency department (ED) charges. Planned readmissions that had an admission type of “emergent” or “urgent” and/or ED charges may have been unplanned. Because we cannot unequivocally determine whether or not the readmissions were misclassified, we refer to these readmissions as “potentially misclassified” in this manuscript. We also calculated the potential misclassification rate by hospital type.

RESULTS

For 131 Michigan hospitals, we identified 143,054 index admissions, 16,116 (11.3%) 30-day readmissions, and 1252 (7.8%) planned readmissions (Table 1).

Of the unplanned readmissions, 97.0% had either an admission type that was “urgent” or “emergent” and/or ED charges, 96.2% were associated with an “emergent” or “urgent” admission type, and 84.3% had emergency room charges on the claim line.

The majority of planned readmissions (723 [57.8%]) were associated with an “emergent” or “urgent” admission type (range: 55.8% for pneumonia to 66.5% for COPD; Table 2). In addition, many planned readmissions (513 [41.0%]) had ED charges reported on the claim (range: 37.3% for CHF to 52.6% for COPD). Of the potentially misclassified planned readmissions, the most frequent combination of primary diagnosis, secondary diagnosis, and procedure was by far “coronary atherosclerosis of native coronary artery,” “intermediate coronary syndrome,” and “percutaneous transluminal coronary angioplasty.”

There were some differences in potential misclassification rate by hospital type. Specifically, teaching hospitals had lower potential misclassification rates than nonteaching hospitals (57.9% vs 59.7%). Larger (≥ 300 beds) hospitals had similar potential misclassification rates to smaller

TABLE 2. Potentially Misclassified Planned Readmissions, by Condition

Condition	% of Planned Readmissions Categorized as “Emergent” or “Urgent”	% of Planned Readmissions with >\$0 of ED Charges
Pneumonia	55.8%	43.7%
AMI	57.2%	38.2%
CHF	56.0%	37.3%
COPD	66.5%	52.6%
Joint	57.4%	50.0%
Total	57.8%	41.0%

NOTE: Abbreviations: AMI, acute myocardial infarction; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; ED, emergency department; Joint, joint replacement.

(<300 beds) hospitals (58.1% vs 58.6%). Urban hospitals had lower potential misclassification rates than rural hospitals (58.0% vs 63.3%).

DISCUSSION

In this study, we found that planned readmissions are generally infrequent. However, the majority are coded with an emergent or urgent admission type and many have ED charges reported on the claim. These findings suggest that the CMS readmission algorithm examined in this study may potentially misclassify many planned readmissions and that CMS should explore the use of admission type and presence of ED charges in the unplanned/planned readmission algorithm.

Our primary finding that planned readmissions are infrequent is supported by several observations.^{7-9,11} In the initial article describing the CMS algorithm,⁷ 7.8% of readmissions were considered planned; upon review of the discharge medical records from the index admissions, 41.3% of these planned readmissions were found to be unplanned. These findings closely correlate with our own findings that 7.8% of readmissions were considered planned by the CMS criteria, and 57.8% of planned readmissions were urgent or emergent. From a clinical perspective, there are few circum-

stances where a patient undergoing an elective procedure will transit electively through the ED.

The CMS algorithm was intentionally designed to have a high specificity for unplanned readmissions to ensure that truly planned readmissions would not be characterized as unplanned.⁷ There is a potential tradeoff to increasing the sensitivity for unplanned readmissions, in that more planned readmissions might be inadvertently characterized as unplanned. Additional validation work (ie, medical chart review) will be required to explore potentially misclassified planned readmissions in greater detail.

Our study has several limitations. First, we rely solely on information in administrative claims to determine whether an admission is planned. The full clinical story is obviously limited by this method. However, the CMS readmission algorithm is only based on information from administrative claims,⁷ and our goal was to explore a method of improving the algorithm that could be applied by CMS in a pragmatic manner. Second, the validity of the admission type variable for the purpose of identifying “emergent” and “urgent” admissions is not entirely clear. However, based on personal communication with the Research Data Assistance Center, the variable is known to be reliable, although no specific validity testing has been performed. Third, it is possible that some truly planned readmissions began in the ED. This situation may arise at small hospitals. However, we found that most of the planned readmissions that started in the ED had secondary diagnosis codes associated with acute conditions. In addition, we did not find a disproportionate number of potentially misclassified planned readmissions at small hospitals. Fourth, the association between high readmission rates and poor quality of care has been called into question recently. However, the purpose of this study is not to assess the quality of healthcare provided by these hospitals; our intent is to explore opportunities to improve the HRRP planned readmission algorithm. Fifth, our analysis only included the state of Michigan. However, Michigan is 1 of the 10 largest states by population, and we do not expect significant differences between our data and the rest of the country. Sixth, we conducted this analysis with version 3.0 of the CMS readmission algorithm. The latest version (4.0) has made several substantial changes to reduce the number of potentially misclassified planned readmissions. However, neither admission type nor presence of ED charges are considered in the updated version. Therefore, our study provides another potential target for further improvement.

These limitations notwithstanding, these findings have important implications for key stakeholders. Relevant to pol-

icymakers, the finding that a large percentage of the planned readmissions had ED charges and/or emergent/urgent admission claim type suggests that CMS should explore the use of these variables in their readmission algorithm. Relevant to hospitals and physicians, the potential misclassification of some planned readmissions suggests that close evaluation of the sources and causes of readmission is imperative during the local development of readmission reduction initiatives.

Collectively, these findings suggest that although planned readmissions are infrequent, many of these planned readmissions may actually be nonelective or unplanned in nature. Furthermore, our findings suggest that the CMS readmission algorithm might improve its accuracy by considering the admission type and the presence of ED charges. Future research in this area should focus on validating the use of ED charges and admission type to identify unplanned readmissions through medical chart review. The aim of the HRRP is to identify signals of poor quality in a fair and equitable manner. Misclassification of readmissions will limit CMS' ability to achieve this important goal.

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