

RESEARCH BRIEF

LOWER READMISSIONS
FOR HEART PATIENTS
TIED TO CORE MEASURE
COMPLIANCE AND SHORTER
LENGTHS OF STAY

DAVE FOSTER, PHD, MPH
JANET YOUNG, MD, MHSA
CENTER FOR HEALTHCARE ANALYTICS

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OVERVIEW

By analyzing the association between compliance with heart attack and heart failure core measures, patient length of stay (LOS), and readmission rates, researchers at Thomson Reuters have found:

- Hospitals with better core measure compliance have lower readmission rates. This suggests that hospitals can lower readmissions by following recommended processes of care more closely, and that adhering to these processes has positive effects that extend beyond initial hospitalization.
- Hospitals with higher readmission rates tend to have longer initial lengths of stay, suggesting that premature discharge is not the cause of readmissions.

BACKGROUND

One of the first financial impacts to hospitals as a result of reform legislation is a reduction in reimbursement for excessive readmission of Medicare inpatients. Starting with discharges in October 2011, the impact of the payment penalties could be significant.

The Centers for Medicare and Medicaid Services (CMS) 30-day readmission rates have become a broadly accepted measure of the effectiveness of overall hospital care. Readmissions are considered to be related to quality of care during the initial hospital stay as well as continuity of care; they allow us to understand how hospital care of inpatients with particular conditions may contribute to issues with their post-discharge medical stability and recovery. In addition, tracking these measures may help hospitals identify patients at risk for post-discharge problems if discharged too soon, as well as target improvements in discharge planning and aftercare processes.

Core measures, developed by The Joint Commission and endorsed by the National Quality Forum, assess adherence to processes of care that are evidence-based and thought to result in better outcomes. They are a widely accepted method for measuring patient care quality that includes specific guidelines for heart attack, heart failure, pneumonia, pregnancy and related conditions, and surgical infection prevention.

In this study, we looked specifically at the heart attack and heart failure core measures. Several of these relate to care at discharge, including medications and general discharge instructions. These processes of care, if effective, should lead to lower readmission rates. There is a school of thought that links readmissions to discharging patients prematurely. If readmissions are related to unwarranted early discharges, we might expect to find a shorter initial LOS for patients who are readmitted.

OBJECTIVE

Our objective was to evaluate the extent to which the CMS 30-day readmission rates for heart attack and heart failure are associated with risk-adjusted LOS and mean core measures results.

DATA SOURCES

The core measure performance data were based on results posted on the CMS Hospital Compare Web site. Core measure results reflect hospital discharges from July 1, 2007, through June 30, 2008. Our study included six of the seven reported heart attack measures and all of the reported heart failure measures. We excluded the heart attack core measure “Heart attack patients given fibrinolytic medication within 30 minutes of arrival” because it was not reported by most in-study hospitals. The included core measures were as follows:

Heart Attack Core Measures

1. Patients given angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor (ARB) for left ventricular systolic (LVS) dysfunction
2. Patients given aspirin at arrival
3. Patients given aspirin at discharge
4. Patients given beta blocker at discharge
5. Patients given percutaneous coronary intervention (PCI) within 90 minutes of arrival
6. Patients given smoking cessation counseling

Heart Failure Core Measures

1. Patients given ACE inhibitor or ARB for LVS dysfunction
2. Patients given evaluation of LVS function
3. Patients given smoking cessation counseling
4. Patients given discharge instructions

The 30-day readmission results were also based on CMS Hospital Compare data. The readmission data we used was from July 1, 2006, through June 30, 2009.

Data for LOS was based on Medicare Provider Analysis and Review (MedPAR) data for October, 2007 through September, 2008.

Our database for this analysis contained nearly 4,000 hospitals.

METHODS

We evaluated hospital-specific 30-day readmission rates for each clinical group (heart attack and heart failure), in terms of their correlation with:

1. Risk-adjusted hospital LOS
2. Mean core measures percent for heart attack and heart failure

We used the Refined Diagnosis Related Groups (RDRGs) to adjust LOS for severity.¹ For each hospital, we calculated a mean core measures percent for each of the two clinical groups (heart attack and heart failure) using a mean of the reported core measures.

¹Wynn, B. Comparative Performance of the MS-DRGs and RDRGs in Explaining Variation in Cost for Medicare Hospital Discharges. RAND Health. Working paper series WR606. July 2008. www.rand.org/pubs/working_papers/2008/RAND_WR606.pdf.

RESULTS

We found that for the patient groups studied hospitals with better core measure compliance have lower readmission rates, and that hospitals with higher readmission rates tend to have longer initial lengths of stay. For both points, the correlation was statistically significant.

There was a statistically significant correlation between heart attack and heart failure risk-adjusted LOS and readmission rates. The positive correlations here indicate that hospitals with longer risk-adjusted LOS for the respective clinical groups had higher readmission rates than other hospitals (Table 1).

TABLE 1: Correlation Between LOS and Readmission Rates

RISK-ADJUSTED LOS AND CMS READMISSION RATES	PEARSON CORRELATION (POSITIVE OR NEGATIVE ASSOCIATION)	STATISTICAL SIGNIFICANCE (P-VALUE)	HOSPITALS IN GROUP
Heart Attack	0.20881	<0.0001	2,393
Heart Failure	0.15705	<0.0001	3,793

There was also a statistically significant correlation between the heart attack and heart failure core measures mean percentages and the CMS heart attack readmission rates (Table 2). The negative correlations here indicate that better adherence to core measures results in lower readmission rates.

TABLE 2: Correlation Between Core Measure Scores and Readmission Rates

CORE MEASURES SCORES AND CMS READMISSION RATES	PEARSON CORRELATION (POSITIVE OR NEGATIVE ASSOCIATION)	STATISTICAL SIGNIFICANCE (P-VALUE)	HOSPITALS IN GROUP
Heart Attack	-0.18016	<0.0001	2,391
Heart Failure	-0.09683	<0.0001	3,694

A Pearson correlation, the most commonly used measure of correlation, shows the strength of linear dependence between two variables. It ranges from +1 to -1. A positive value for the correlation, like what we found in the LOS/readmission rate analysis, implies a positive association (large values of X tend to be associated with large values of Y and small values of X tend to be associated with small values of Y). A negative value for the correlation, like what we found for the core measure/readmission rate analysis, would imply a negative or inverse association (large values of X tend to be associated with small values of Y and vice versa). A p-value, or probability value, shows statistical significance. Small p-values, like the ones we found in this analysis, indicate that it is very unlikely that the results were due to chance.

DISCUSSION

It is possible that incomplete risk adjustment could have influenced these results linking readmission rates to longer lengths of stay. In other words, patients who were sicker and therefore had longer lengths of stay are also more likely to be readmitted due to their higher acuity. Some incomplete risk adjustment is unavoidable; all risk-adjustment methodologies are subject to limitations in predictive accuracy. Additionally, although premature discharge would typically be reflected by a shorter LOS, the appropriate LOS for any patient is based on clinical parameters.

Although statistically significant, the Pearson correlations between 30-day readmission rate and LOS or core measure mean percent are relatively low and explain only a small part of the variability in readmission rates among hospitals. While LOS and process of care related to core measures has an impact on readmissions, there are clearly additional factors impacting the readmission rate.

CONCLUSIONS

Better performance on heart attack and heart failure core measures is related to lower readmission rates for these conditions. Hospitals with higher readmission rates tend to have longer initial lengths of stay, suggesting that premature discharge is not the cause of readmissions.

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Thomson Reuters
777 E. Eisenhower Parkway
Ann Arbor, MI 48108 USA
Phone +1 800 366 7526

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