# Relationship Between Patient Satisfaction With Inpatient Care and Hospital Readmission Within 30 Days

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**Objectives:** To determine whether hospitals where patients report higher overall satisfaction with their interactions among the hospital and staff and specifically their experience with the discharge process are more likely to have lower 30-day readmission rates after adjustment for hospital clinical performance.

**Study Design:** Among patients 18 years or older, an observational analysis was conducted using Hospital Compare data on clinical performance, patient satisfaction, and 30-day risk-standardized readmission rates for acute myocardial infarction, heart failure, and pneumonia for the period July 2005 through June 2008.

**Methods:** A hospital-level multivariable logistic regression analysis was performed for each of 3 clinical conditions to determine the relationship between patient-reported measures of their satisfaction with the hospital stay and staff and the discharge process and 30-day readmission rates, while controlling for clinical performance.

**Results:** In samples ranging from 1798 hospitals for acute myocardial infarction to 2562 hospitals for pneumonia, higher hospital-level patient satisfaction scores (overall and for discharge planning) were independently associated with lower 30-day readmission rates for acute myocardial infarction (odds ratio [OR] for readmission per interquartile improvement in hospital score, 0.97; 95% confidence interval [CI], 0.94-0.99), heart failure (OR, 0.96; 95% CI, 0.95-0.97), and pneumonia (OR, 0.97; 95% CI, 0.96-0.99). These improvements were between 1.6 and 4.9 times higher than those for the 3 clinical performance measures.

**Conclusions:** Higher overall patient satisfaction and satisfaction with discharge planning are associated with lower 30-day risk-standardized hospital readmission rates after adjusting for clinical quality. This finding suggests that patient-centered information can have an important role in the evaluation and management of hospital performance.

*(Am J Manag Care. 2011;17(1):41-48)*

Hospital readmission rates are an important measure of the quality and costs of healthcare. Recent estimates suggest that almost one-fifth of Medicare beneficiaries discharged from a hospital are readmitted within 30 days, resulting in an estimated annual cost of unplanned readmissions of $17.4 billion.[1,2] Although factors outside of the hospital contribute to unplanned readmissions,[3,4] the fact that one-quarter of readmissions occur within 30 days of discharge suggests that there is room for improvement in the quality of inpatient care and discharge planning. Therefore, understanding the factors associated with hospital readmission has important implications for managing the provision of healthcare.

Until recently, the measurement of hospital quality has focused on how often the hospital delivers evidence-based clinical care. In June 2009, Medicare released the Hospital Care Quality Information from the Consumer Perspective (HCAHPS), a large database of information on patients' perceptions of their hospital experiences and, in particular, their interactions with the hospital's staff.[5,6] It is unknown whether patients can "sense" from these interactions and experiences if they are getting high-quality care even if they do not have deep medical knowledge about the proper courses of treatment. Even if they can form beliefs about the appropriateness of the treatments, it is unclear whether their responses to the HCAHPS capture these beliefs. It is also unclear whether these patient satisfaction data provide information about the overall quality of inpatient care beyond that obtained from commonly accepted clinical performance measures that also are used to assess the quality of a hospital's care.

We sought to address these questions by studying hospital-level patient perceptions of their inpatient care and discharge planning at approximately 2500 hospitals in the United States for which we also have clinical performance measures and 30-day readmission rates for the following 3 clinical areas within the hospital: acute myocardial infarction, heart failure, and pneumonia. Specifically, we sought to determine whether hospitals where patients reported higher satisfaction with inpatient care and discharge planning were more likely to have lower 30-day readmission rates for these 3 clinical areas after adjustment for hospital clinical performance.

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## METHODS

### Data Sources

Our goal was to obtain measures of each hospital's quality

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### Take-Away Points

Hospitals routinely use patient satisfaction surveys to assess the quality of care, although it remains unclear whether patient satisfaction data provide valid information about the medically related quality of hospital care.

- Higher patient satisfaction with inpatient care and discharge planning is associated with lower 30-day readmission rates even after controlling for hospital adherence to evidence-based practice guidelines.
- Patient-centered information can have an important role in the evaluation and management of hospital performance.

of care, as well as good indicators of the hospital's objective clinical performance and patients' perceptions of this performance. To do this, we used 2 major data sources.

The first major data source was the June 2009 release of the Hospital Compare database by the US Department of Health and Human Services.[7] It contained a 3-year aggregated mean of a hospital's 30-day risk-standardized readmission rates for 3 clinical areas (acute myocardial infarction, heart failure, and pneumonia) for the period July 2005 through June 2008. We also used this data source to obtain the annual clinical process-of-care performance for the same 3 clinical areas for the same 3 years. We then combined these 3 years of data to form a 3-year mean for the same period for each hospital for each of the 3 clinical areas. We used the readmission rates to measure the hospital's quality of care and the clinical process-of-care data to measure the hospital's objective clinical performance.

The second major data source was the HCAHPS patient satisfaction survey for the period July 2007 through June 2008. We used this data source to measure patients' perceptions of a hospital's clinical performance. Patients included in the satisfaction survey were 18 years or older, stayed at least 1 night in the hospital, and had a nonpsychiatric diagnosis at discharge. The surveys covered admissions for medical and surgical care and were initiated between 48 hours and 42 days after discharge. Hospital-level means were adjusted by the Centers for Medicare & Medicaid Services to account for factors known to affect patient responses. These factors include the mode of survey delivery (eg, mail vs phone), patient mix (eg, self-reported health and time between discharge and survey completion), and nonresponse percentages.

These data were supplemented by data on hospital structural characteristics. These were obtained from the database of the American Hospital Association.

It should be noted that these data sources do not allow us to link individual patients to the objective clinical performance or their readmission. Instead, these should be viewed as fallible measures of a hospital's objective quality of care (ie, readmission rates) and the performance of in-hospital care provided to the hospital's patients in general (ie, process-of-care and patient satisfaction scores).

## Study Population

We identified 4469 hospitals that reported 30-day risk-standardized readmission rates, 4488 hospitals that collected clinical performance measures, 3746 hospitals that collected HCAHPS surveys, and 6338 hospitals in the American Hospital Association database. Using the hospital as the unit of analysis for a given clinical area (eg, acute myocardial infarction, heart failure, pneumonia), we included all hospitals that had complete information for readmission rates, clinical performance measures, patient satisfaction scores, and American Hospital Association hospital structural characteristics. This process resulted in a sample of 1798 hospitals for acute myocardial infarction, 2561 hospitals for heart failure, and 2562 hospitals for pneumonia. The clinical performance data were based on 430,982 patients with acute myocardial infarction (mean, 240 per hospital); 1,029,578 patients with heart failure (mean, 402 per hospital); and 912,522 patients with pneumonia (mean, 356 per hospital).

## Data Definitions

There were 18 clinical performance measures in the 3 clinical categories (7 for acute myocardial infarction, 4 for heart failure, and 7 for pneumonia). Using the composite scoring method by the Centers for Medicare & Medicaid Services, we calculated hospital-level scores for each clinical category by dividing the number of times the procedures in a category were followed by the total number of eligible times associated with those measures.[8,9]

The HCAHPS database contains patient assessments of 10 dimensions of patient care derived from 18 of 22 individual survey questions. Most of the 10 dimensions of patient care were highly correlated. Based on prior work on customer satisfaction, we used 2 hospital-specific questions ("How do you rate the hospital overall?" and "Would you recommend the hospital to friends and family?") to assess patients' overall satisfaction with their hospital experience.[10-12] We postulated that this overall patient satisfaction measure would be an excellent (albeit fallible) measure of patients' observations of the performance of the hospital's staff and would be an important predictor of readmission rates. Note that such patient observations do not require literacy in medicine but only an ability to know if the service provider "cares" and shows some concern. We also postulated that patient satisfaction with a hospital's discharge process would be a good indicator of the hospital's adherence to good discharge policies and predict re-

admission rates for each of the clinical areas. We captured these perceptions using the following 2 questions from the HCAHPS: "During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?" and "During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?"

We transformed the HCAHPS information on each hospital into overall satisfaction and discharge satisfaction scores as follows. The HCAHPS database reported the total number of patients surveyed and the percentage of patients who responded to the different levels of the particular question. For the 2 overall satisfaction questions, the database provided 3 levels (ie, a satisfaction rating of 1-6 [low], 7-8 [medium], or 9-10 [high]). We multiplied the percentage of patients who responded to a given level by the numerical values of 0, 0.5, and 1 for low, medium, and high, respectively, to obtain scores between 0 and 1, where 1 indicates that all patients gave a high response and 0 indicates that all patients gave a low response to the particular question. The hospital-level overall patient satisfaction score is the mean of these 2 numerical values. For the 2 discharge questions, we converted the reported percentages into numerical values by assigning the percentage of "no" responses the value of 0 and the percentage of "yes" responses the value of 1 and averaging the 2 questions across respondents. Note that the Hospital Compare documentation does not provide patient satisfaction information for specific diagnosis related groups but instead reflects patient responses for several other units, as well as the 3 units we analyze. Therefore, the patient satisfaction scores used for analyzing readmission rates for acute myocardial infarction, heart failure, and pneumonia are the same for a given hospital.

The hospital-level 30-day risk-standardized readmission rates and sample sizes were obtained directly from the Hospital Compare database, and our measures of hospital structural characteristics came directly from the American Hospital Association database. These measures included the number of beds, medical school affiliation, geographic region, and the presence of adult interventional cardiac catheterization facility, medical, and surgical intensive care units.

### Statistical Analysis

Our primary objectives were to determine the association of hospital-level 30-day risk-standardized readmission rates with (1) hospital-level clinical performance as measured by the guideline adherence score in each clinical area and (2) hospital-level overall perception among patients of their hospital stay and interactions with the hospital staff and their view of the hospital's discharge process. We performed 3 separate logistic regression analyses in which the dependent measures were based on the risk-standardized hospital readmission rates for each of the 3 clinical areas.[13] Specifically, we converted the readmission rates to 1 or 0 to reflect whether patients were readmitted. Therefore, positive coefficients indicate higher readmission rates. The unit of analysis was the hospital; therefore, hospitals with more patients were weighted more heavily. The independent variables were hospital-level clinical performance, overall patient satisfaction, and patient satisfaction with discharge planning. We also included hospital structural characteristics to control for fixed effects that might influence the outcome measures.

To help inform the policy implications of the results, we performed sensitivity analyses to determine the change in predicted risk-standardized 30-day readmission rates associated with a change in hospital score from the 25th percentile to the 75th percentile for the overall patient satisfaction score and for the patient satisfaction with discharge planning score, while keeping the hospital-level clinical composite score fixed. Conversely, we also examined the effect of the same interquartile change in hospital-level clinical composite score, while keeping the patient satisfaction measures fixed.

Finally, we calculated pairwise Pearson product moment correlation coefficients between the overall patient satisfaction score and the 8 other HCAHPS-reported dimensions of quality. This was to assess which dimensions were most associated with the patients' overall satisfaction with the hospital's quality of care.

We used JMP version 7.0.2 (SAS Institute Inc, Cary, North Carolina) for all statistical analyses. $P < .05$ was considered statistically significant.

## RESULTS

**Table 1** gives the characteristics of the study hospitals. Although hospitals in the sample tended to be larger and better resourced than hospitals in the total sample of American Hospital Association acute care hospitals, the 3 samples represent a broad cross-section of US hospitals. **Table 2** gives the distributions of the variables of interest, including the scores for overall patient satisfaction and patient satisfaction with discharge planning, the clinical composite score, and 30-day risk-standardized readmission rates. There was considerable variability in patient-reported measures and clinical measures across hospitals. Note that the mean 30-day risk-standardized readmission rates are approximately 20% for all 3 clinical areas.

**Table 3** gives the correlations among the variables. The 2 hospital-level patient-reported measures were not highly correlated with the hospitals' clinical performance measures.

**Table 1.** Characteristics of the Study Hospitals

| Characteristic | Study Hospitals | | | All AHA Acute Care Hospitals (n = 4105) |
|---|---|---|---|---|
| | Acute Myocardial Infarction (n = 1798) | Heart Failure (n = 2561) | Pneumonia (n = 2562) | |
| **No. of beds, median (interquartile range)** | 208 (122-333) | 149 (69-276) | 148 (69-275) | 107 (42-230) |
| **Interventional cardiac catheterization, No. (%)** | 1027 (57.1) | 1046 (40.8) | 1042 (40.7) | 1314 (32.0) |
| **Medical school affiliation, No. (%)** | 666 (37.0) | 732 (28.6) | 734 (28.6) | 1026 (25.0) |
| **Medical or surgical intensive care unit, No. (%)** | 1702 (94.7) | 2219 (86.6) | 2210 (86.3) | 3038 (74.0) |
| **US geographic region, No. (%)** | | | | |
| New England | 133 (7.4) | 150 (5.9) | 152 (5.9) | 184 (4.5) |
| Mid-Atlantic | 234 (13.0) | 255 (10.0) | 256 (10.0) | 332 (8.1) |
| South Atlantic | 330 (18.4) | 424 (16.6) | 418 (16.3) | 579 (14.1) |
| East North Central | 285 (15.9) | 426 (16.6) | 409 (16.0) | 652 (15.9) |
| East South Central | 132 (7.3) | 224 (8.7) | 225 (8.8) | 349 (8.5) |
| West North Central | 147 (8.2) | 258 (10.1) | 272 (10.6) | 606 (14.8) |
| West South Central | 224 (12.5) | 372 (14.5) | 367 (14.3) | 644 (15.7) |
| Mountain | 86 (4.8) | 145 (5.7) | 156 (6.1) | 308 (7.5) |
| Pacific | 227 (12.6) | 307 (12.0) | 307 (12.0) | 451 (11.0) |

AHA indicates American Hospital Association.

**Table 2.** Distribution of Hospital-Level Patient-Reported Measures, Clinical Composite Scores, and 30-Day Risk-Standardized Readmission Rates

| Variable | Percentile | | | | |
|---|---|---|---|---|---|
| | 5th | 25th | Median | 75th | 95th |
| **Patient-reported measures** | | | | | |
| **Overall patient satisfaction** | | | | | |
| Acute myocardial infarction | 66.3 | 74.5 | 78.5 | 82.3 | 87.0 |
| Heart failure | 66.4 | 75.0 | 78.8 | 82.8 | 88.3 |
| Pneumonia | 66.5 | 75.0 | 79.0 | 83.0 | 88.5 |
| **Patient satisfaction with discharge planning** | | | | | |
| Acute myocardial infarction | 71.0 | 77.0 | 80.0 | 83.0 | 87.0 |
| Heart failure | 70.0 | 77.0 | 80.0 | 83.0 | 88.0 |
| Pneumonia | 70.0 | 77.0 | 80.0 | 83.0 | 88.0 |
| **Clinical composite score** | | | | | |
| Acute myocardial infarction | 82.7 | 91.1 | 94.4 | 96.5 | 98.5 |
| Heart failure | 57.1 | 76.0 | 84.1 | 89.7 | 96.0 |
| Pneumonia | 76.1 | 84.0 | 88.2 | 91.4 | 95.1 |
| **30-Day risk-standardized readmission rate** | | | | | |
| Acute myocardial infarction | 17.8 | 19.0 | 19.9 | 20.7 | 22.2 |
| Heart failure | 21.3 | 23.1 | 24.4 | 25.7 | 28.1 |
| Pneumonia | 15.6 | 17.0 | 18.0 | 19.2 | 21.2 |

**Table 3.** Pairwise Correlations Among Variables[a]

| Variable | Correlation Coefficient | | |
|---|---|---|---|
| | Patient Satisfaction With Discharge Planning | Clinical Composite Score | 30-Day Risk-Standardized Readmission Rate |
| **Acute myocardial infarction** | | | |
| Overall patient satisfaction | 0.613 | 0.252 | –0.199 |
| Patient satisfaction with discharge planning | — | 0.211 | –0.167 |
| Clinical composite score | — | — | –0.098 |
| **Heart failure** | | | |
| Overall patient satisfaction | 0.604 | 0.110 | –0.203 |
| Patient satisfaction with discharge planning | — | 0.126 | –0.188 |
| Clinical composite score | — | — | –0.090 |
| **Pneumonia** | | | |
| Overall patient satisfaction | 0.599 | 0.211 | –0.159 |
| Patient satisfaction with discharge planning | — | 0.228 | –0.129 |
| Clinical composite score | — | — | –0.105 |

[a]All correlations are statistically significant at $P < .001$.

Overall patient satisfaction and patient satisfaction with discharge planning were negatively and significantly correlated with higher 30-day risk-standardized readmission rates for all 3 clinical conditions. In addition, all 3 clinical composite scores were negatively and significantly correlated with higher 30-day risk-standardized readmission rates, although these correlations are smaller than those associated with the patient satisfaction scores.

Table 4 gives the results of the multivariable logistic regression analyses for the variables of interest. All 3 clinical performance measures were negatively associated with higher 30-day risk-standardized readmission rates, although the acute myocardial infarction and heart failure measures were not statistically significant ($P = .16$ and $P = .06$, respectively). Higher overall patient satisfaction scores also were associated with lower 30-day risk-standardized readmission rates for all 3 clinical conditions. In this case, all 3 measures were highly statistically significant ($P \leq .001$). Finally, scores for patient satisfaction with discharge planning were associated with lower 30-day risk-standardized readmission rates for all 3 clinical areas and were statistically significant for heart failure and for pneumonia ($P < .001$ and $P = .02$, respectively).

The Figure shows that the odds of 30-day risk-standardized readmission were associated with interquartile improvements in hospitals' patient total satisfaction scores (ie, overall patient satisfaction and patient satisfaction with discharge planning), while holding the clinical composite scores fixed, and vice versa. Interquartile improvements in patient total satisfaction scores were associated with significantly lower predicted 30-day risk-standardized readmission rates for acute myocardial infarction (odds ratio [OR] = 0.97; 95% confidence interval [CI], 0.94-0.99), heart failure (OR = 0.96; 95% CI, 0.95-0.97), and pneumonia (OR = 0.97; 95% CI, 0.96-0.99). Also shown are the interquartile improvements in the 3 clinical performance measures. The improvements in 30-day risk-standardized readmission rates associated with interquartile improvements in the patient total satisfaction scores for heart failure, acute myocardial infarction, and pneumonia were 4.9, 2.2, and 1.6 times higher, respectively, than those associated with interquartile improvements in the same 3 clinical composite scores.

Table 5 gives the correlations of the overall patient satisfaction measure with each HCAHPS question category. Quality of communication by nurses had the strongest correlation with overall patient satisfaction, followed by several other measures that capture the patient's interaction with the hospital staff. Patient satisfaction with discharge planning was seventh of the 8 questions in terms of correlation, indicating that it captured a different dimension from that captured by overall patient satisfaction. Also low in terms of correlation with overall patient satisfaction were the 2 questions concerning the hospital facilities (ie, cleanliness and noise level), again highlighting that overall patient satisfaction seems to be capturing the patients' interactions with the hospital staff.

## DISCUSSION

A substantial proportion of Medicare beneficiaries experience an unplanned hospital readmission within 30 days of

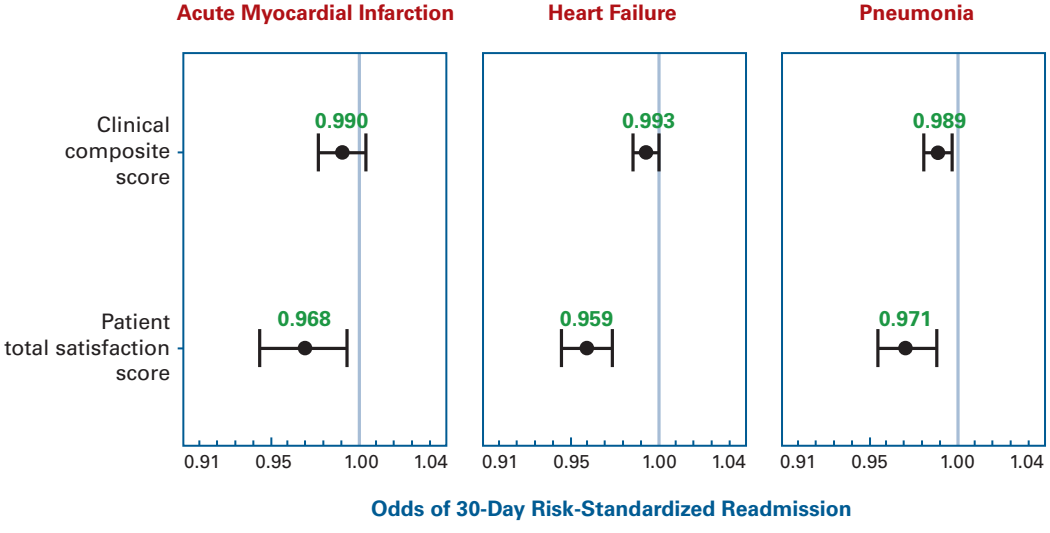
**Table 4.** Multivariable Predictors of 30-Day Risk-Standardized Readmission Rates

| Variable | Coefficient Estimate (SE) | $\chi^2$ Statistic | *P* |
|---|---|---|---|
| **Acute myocardial infarction** | | | |
| Overall patient satisfaction | −0.268 (0.084) | 10.20 | .001 |
| Patient satisfaction with discharge planning | −0.189 (0.113) | 2.80 | .09 |
| Clinical composite score | −0.184 (0.131) | 1.98 | .16 |
| **Heart failure** | | | |
| Overall patient satisfaction | −0.321 (0.048) | 45.03 | <.001 |
| Patient satisfaction with discharge planning | −0.284 (0.062) | 20.75 | <.001 |
| Clinical composite score | −0.051 (0.027) | 3.54 | .06 |
| **Pneumonia** | | | |
| Overall patient satisfaction | −0.232 (0.056) | 17.11 | <.001 |
| Patient satisfaction with discharge planning | −0.169 (0.072) | 5.56 | .02 |
| Clinical composite score | −0.150 (0.053) | 7.90 | .005 |

discharge. In this study, we found that patients' stated overall satisfaction score and their perception of the hospital's discharge process were significantly and negatively correlated with the hospital's 30-day readmission rates in the 3 clinical areas studied. Moreover, these 2 patient-related measures were more predictive than the objective clinical performance measures often used to assess the quality of hospital care. Although the key drivers of hospital readmission are complex, our findings suggest that patients' perspectives on inpatient care and discharge planning provide important insights into hospital performance with respect to quality. Moreover, because the overall satisfaction score is most highly correlated with factors associated with the patients' interaction with the hospital staff, our findings are consistent with the observation by the Institute of Medicine that high-quality care is "patient centered" and responsive to patients' preferences, needs, and values.[14] More generally, given the association between these patient perceptions and better outcomes, our findings suggest that patient-centered information can be used to assess the degree to which patients will be more likely to experience better health outcomes, at least as measured by hospital readmission rates.

Our findings support the use of patient-reported information to complement the more used and more objective clinical measures when assessing the quality of patient care for a given hospital. These patient-level measures not only are more pre-

**Figure.** Association Between Interquartile Improvements in Hospital-Level Patient Total Satisfaction Scores and 30-Day Risk-Standardized Readmission Rates




Shown are the odds ratios for 30-day risk-standardized hospital readmission associated with 1-quartile improvements in hospital-level patient total satisfaction scores for acute myocardial infarction, heart failure, and pneumonia.

**Table 5.** Pairwise Correlations of HCAHPS-Reported Dimensions of Quality and Overall Patient Satisfaction

| Variable | Correlation Coefficient |
|---|---|
| How often did nurses communicate well with patients? | 0.845 |
| How often was patient's pain well controlled? | 0.805 |
| How often did patients receive help quickly from hospital staff? | 0.776 |
| How often did staff explain about medicines before giving them to patients? | 0.740 |
| How often did doctors communicate well with patients? | 0.695 |
| How often were the patients' rooms and bathrooms kept clean? | 0.675 |
| Patient satisfaction with discharge planning | 0.638 |
| How often was the area around patients' rooms kept quiet at night? | 0.611 |

HCAHPS indicates Hospital Care Quality Information from the Consumer Perspective.

dictive and offer insights into a different dimension of hospital activities than those obtained from clinical performance measures alone, but they also seem to be clinically important in terms of providing a way to increase the quality of care. For example, using our model estimates we would predict that, if a hospital increased its patient total satisfaction score from the 25th percentile to the 75th percentile, this increase would be associated with decreases in 30-day readmission of 2.6% for acute myocardial infarction, 3.1% for heart failure, and 2.3% for pneumonia. If these reductions were obtained for our total sample of patients, this would have been associated with a reduction of more than 14,000 readmissions.

Our finding that good communication is associated with higher patient satisfaction is consistent with previous studies[15-17] that found a positive association between effective provider–patient communication and health outcomes. It also is compatible with a recent study[18] by our author group that used more fine-grained measures of patient satisfaction. Specifically, the study found that overall satisfaction was best predicted by patients' perceptions of the skill and responsiveness of nurses and physicians, followed by issues concerning pain and communication with the staff about the patients' concerns and emotional health. Again, the study found that factors associated with the physical plant had a much smaller influence on overall patient satisfaction. Consequently, patients seem to differentiate between the technical (ie, medical) and nontechnical (ie, aesthetic) aspects of medical care. This leads us to believe that patient satisfaction is less about trying to make patients "happy" (eg, improving the food or the decor of the room) and is more about increasing the quality of their interactions with hospital personnel, especially nurses and physicians.

Finally, we note that hospitals have devoted substantial resources to managing the current core set of clinical performance measures.[19] Despite dramatic improvements in clinical process performance for heart failure, there has been virtually no reduction in these readmission rates or costs.[20] Our findings confirm the lack of association between heart failure clinical measures and readmission rates.[21,22] Conversely, we found that patient-reported measures were highly associated with 30-day readmission rates. Therefore, patient perceptions about hospital care in general and discharge planning specifically may provide an important new tool for measuring the quality of transitions of care.

Our study has several limitations. First, because our data are cross-sectional versus longitudinal, we were only able to make associational and not causal inferences about the relationship between patient satisfaction and hospital readmission. Moreover, patient-reported information is likely a surrogate measure for specific hospital characteristics and practices (eg, quality of staff and the use of clinical protocols) that determine quality of care. More research is needed to evaluate these links.

Second, it is also possible that some patients actually were readmitted before they filled out the survey. Such patients may have used their readmission as a signal of the quality of the hospital's performance. In any case, a key insight of this study is that patients notice and can assess hospital experiences that otherwise go unmeasured.

Third, our analysis is limited in that it does not include factors such as patient compliance and access to primary care, which are known to influence the likelihood of hospital readmission.[23] Moreover, our study only focused on short-term (ie, 30 day) readmission rates and provides little information on long-term care.

Fourth, because our focus was on determining whether the Centers for Medicare & Medicaid Services measures of clinical performance and patient satisfaction are useful indicators of the overall quality of hospital care, the unit of analysis was the hospital and not the patient. This approach precluded the possibility of patient-level analyses that might provide insight into specific dimensions of the patient experience and related outcomes.

Fifth, one could infer that the association between patient satisfaction and outcomes can be explained by healthier patients' being more likely to report being satisfied.[24] However, this is unlikely because the Centers for Medicare & Medicaid Services corrected for this before releasing their data.

Sixth, the period for the satisfaction data (2008) is not entirely contemporaneous with that for the clinical data and the outcome data (2005-2008). This was owing to pragmatic reasons associated with the availability of data. However, when we compared the 2009 satisfaction measures with the 2008 measures, we found no time trend and a correlation of 0.86 between the 2 yearly hospital-level measures, indicating that they were stable (reliable) and a good proxy for the 2 prior years.

In conclusion, higher hospital-level overall patient satisfaction and patient satisfaction with discharge planning are associated with lower 30-day risk-standardized readmission rates after adjustment for clinical quality. Although patients may have little insight into evidence-based medicine, they can assess other aspects of care that are associated with better health outcomes. Therefore, patient-reported information about hospital performance can have an important role in the evaluation and management of hospital quality.

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***Funding Source:*** The authors report no external funding for this study.

***Author Disclosures:*** Dr Glickman reports receiving support through a Physician Faculty Scholar Award from the Robert Wood Johnson Foundation. The other authors (WB, MPM, KAS, RS) report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

***Authorship Information:*** Concept and design (WB, SWG, KAS, RS); acquisition of data (MPM); analysis and interpretation of data (WB, SWG, MPM, RS); drafting of the manuscript (SWG, MPM, RS); critical revision of the manuscript for important intellectual content (WB, SWG, KAS, RS); statistical analysis (WB, MPM, RS); administrative, technical, and logistic support (WB, KAS, RS); and supervision (WB).

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