Health Care Reform

Hospital Cost of Care, Quality of Care, and Readmission Rates

Penny Wise and Pound Foolish?

Lena M. Chen, MD, MS; Ashish K. Jha, MD, MPH; Stuart Guterman, MA; Abigail B. Ridgway, BA; E. John Orav, PhD; Arnold M. Epstein, MD, MA

Background: Hospitals face increasing pressure to lower cost of care while improving quality of care. It is unclear if efforts to reduce hospital cost of care will adversely affect quality of care or increase downstream inpatient cost of care.

Methods: We conducted an observational cross-sectional study of US hospitals discharging Medicare patients for congestive heart failure (CHF) or pneumonia in 2006. For each condition, we examined the association between hospital cost of care and the following variables: process quality of care, 30-day mortality rates, readmission rates, and 6-month inpatient cost of care.

Results: Compared with hospitals in the lowest-cost quartile for CHF care, hospitals in the highest-cost quartile had higher quality-of-care scores (89.9% vs 85.3%) and lower mortality for CHF (9.8% vs 10.8%) (P < .001 for both). For pneumonia, the converse was true. Compared with low-cost hospitals, high-cost hospitals had lower quality-of-care scores (85.7% vs 86.6%, P = .002) and higher mortality for pneumonia (11.7% vs 10.9%, P < .001). Low-cost hospitals had similar or slightly higher 30-day readmission rates compared with high-cost hospitals (24.7% vs 22.0%, P < .001 for CHF and 17.9% vs 17.3%, P = .20 for pneumonia). Nevertheless, patients initially seen in low-cost hospitals incurred lower 6-month inpatient cost of care compared with patients initially seen in hospitals with the highest cost of care ($12,715 vs $18,411 for CHF and $10,143 vs $15,138 for pneumonia, P < .001 for both).

Conclusions: The associations are inconsistent between hospitals’ cost of care and quality of care and between hospitals’ cost of care and mortality rates. Most evidence did not support the “penny wise and pound foolish” hypothesis that low-cost hospitals discharge patients earlier but have higher readmission rates and greater downstream inpatient cost of care.


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Health care provision is often designed to achieve 2 important goals, namely, provision of high-quality care and attainment of lower cost of care. Nationally, there are widespread efforts to systematically report on hospital quality of care. The Centers for Medicare and Medicaid Services has taken the lead in routinely reporting more than 30 quality-of-care measures for almost all US hospitals. Beginning in August 2008, these reports were enlarged to include information about cost of care for common conditions to encourage patients to seek low-cost providers. In the private sector, payers are increasingly focused on tiered payment networks in which patients receive financial incentives to choose hospitals that offer high quality and low cost care.

These efforts have great face validity: who could be against encouraging hospitals to provide higher quality care and lower cost of care? However, critics also worry about the trade-off between these 2 goals. In particular, might hospitals with lower cost of care and lower expenditures devote less effort to improving quality of care? Might the pursuit of lower cost of care drive hospitals to be “penny wise and pound foolish,” discharging patients sooner, only to increase readmission rates and incur greater inpatient use over time?

An earlier work examined hospitals’ overall cost of care (for all admissions) and found a positive association with quality of care for congestive heart failure (CHF) as measured by process indicators (higher cost of care and higher quality of care) but no association for pneumonia. No association was found between overall cost of care and mortality rates for CHF or pneu-
monia. We examined condition-specific cost of care herein, hypothesizing that we might find a tight and consistent association between cost of care and quality of care and between cost of care and mortality rates. Specifically, we estimate hospitals’ condition-specific risk-adjusted cost of care for national samples of Medicare patients with CHF or pneumonia, and we address the following 3 questions: (1) Do hospitals that have low risk-adjusted cost of care in 1 year have low risk-adjusted cost of care in subsequent years, and are hospitals’ relative costs of care for CHF and pneumonia correlated? (2) When condition-specific cost of care is used, do low-cost hospitals have low process quality-of-care scores and higher mortality rates? (3) Is there any evidence for the penny-wise and pound-foolish hypothesis that low-cost hospitals may achieve short-term savings by conserving on beneficial diagnostic and therapeutic services or by discharging patients earlier, only to incur higher rates of rehospitalization and greater per capita inpatient cost of care after discharge?

**METHODS**

**DATA**

We used the 2004 to 2006 Medicare Provider Analysis and Review (MedPAR) 100% Files to determine cost of care for patients with each of 2 conditions, namely, CHF and pneumonia. The CHF subgroup was composed of patients discharged with the primary diagnosis of CHF (International Classification of Diseases, Ninth Revision [ICD-9] codes 398.91 and 428.0-428.9). The pneumonia subgroup was composed of patients discharged with the primary diagnosis of pneumonia (ICD-9 codes 480-486).

For all fee-for-service Medicare beneficiaries discharged from a hospital, the MedPAR data provide the charges for care during that admission and the patient’s discharge status, demographic characteristics, and clinical diagnoses. We converted Medicare-allowable charges to cost of care for each year using cost-to-charge ratios from the relevant year of the Inpatient Prospective Payment System (PPS) Impact File (eg, 2009 with data from 2006, as there was a 3-year lag). Cost of care represents a hospital’s mean expenditure and includes overhead expenditure in addition to direct medical cost of care.

The Inpatient PPS Impact File has data on hospitals’ cost-to-charge ratios, the Medicare Wage Index in a hospital’s community, its urban or rural status, and the ratio of interns and residents to beds (a measure of teaching intensity). We supplemented these data with sociodemographic information from the Area Resource File and with additional hospital characteristics from the American Hospital Association. Finally, we used data from the September 1, 2007, public release of the Hospital Quality Alliance program, which reports performance indicator scores for 4416 acute care hospitals based on all adult patients seen during 2006.

**PATIENT AND HOSPITAL SAMPLE**

From an initial sample of 4936 nonfederal medical and surgical hospitals in 48 contiguous states, we excluded 35.6% of hospitals for CHF and 35.5% of hospitals for pneumonia because they were missing data elements from the MedPAR files (321 hospitals for CHF and 503 hospitals for pneumonia) or from the Inpatient PPS Impact Files (1238 hospitals for CHF and 1230 hospitals for pneumonia). Because we were concerned that the highest-cost hospitals and lowest-cost hospitals might be atypical, we also excluded hospitals with the 0.5% highest and 0.5% lowest cost ratios (observed to expected cost of care) (31 hospitals each for CHF and pneumonia).

We then applied exclusion criteria to Medicare discharges in 2006. We excluded patients who were (1) lacking a primary diagnosis of CHF or pneumonia, (2) missing from the Medicare Denominator File, (3) younger than 65 years, (4) members of a health maintenance organization, (5) transferred into a hospital, (6) cost of care outliers, or (7) inpatients with a length of stay (LOS) longer than 60 days.

We then merged the hospital and discharge files and were left with 3146 hospitals, 518 473 discharges, and 400 068 unique patients for CHF. For pneumonia, we were left with 3152 hospitals, 443 564 discharges, and 399 841 unique patients.

**HOSPITAL COST MODEL**

For each hospital for each of the 2 conditions, we built a relative cost index. This index is the ratio of the hospital’s observed mean cost of care per case for Medicare patients for that condition divided by its predicted mean cost of care per case for the same group of patients.

Predicted mean cost of care per case for each condition was determined using a model in which cost of care was regressed on the following variables: (1) patient-level data, including age, sex, race/ethnicity, and the Elixhauser Comorbidity Index (the presence or absence of 29 comorbidities); (2) hospital-level covariates, including teaching intensity (as measured by the ratio of interns and residents to beds) and urban vs rural location; and (3) community-level characteristics, including the Medicare Wage Index, county poverty rate, and proportion of households with an annual income less than $10 000. This model was our core hospital cost model. The model represents an approach previously used that incorporates factors that differ between hospitals and might cause reasonable differences in cost of care.

Using this model, we created a relative cost index, with 1.0 indicating that a hospital’s observed cost of care was the same as its predicted cost of care given its location, characteristics, and case mix. A relative cost index of 1.2, then, would represent a hospital with cost of care about 20% higher than expected for an average hospital with the same characteristics and case mix.

**HOSPITAL PROCESS QUALITY-OF-CARE METRICS**

For each hospital, we calculated a summary performance indicator score for CHF and pneumonia based on patients seen in 2006. There were 4 performance indicators for CHF (discharge instructions, left ventricular functional assessment, angiotensin-converting enzyme inhibitor or angiotensin receptor blocker prescription for left ventricular systolic dysfunction, and smoking cessation counseling) and 7 performance indicators for pneumonia (appropriate initial antibiotic selection, initial antibiotic timing, initial blood culture timing, influenza vaccination, pneumococcal vaccination, oxygenation assessment, and smoking cessation counseling). eTable 1 (http://www.archinternmed.com) gives a detailed description of each quality-of-care indicator. To create summary performance indicator scores, we used the method recommended by the Joint Commission on the Accreditation of Healthcare Organizations. In this approach, the summary performance indicator score is the number of times a hospital performed the appropriate action across all measures for that condition divided by the number of opportunities the hospital had to provide appropriate care.
for that condition. Summary performance indicator scores were not calculated if a hospital did not have at least 30 patients for at least 1 of the measures for each condition.

STATISTICAL ANALYSIS

We used a combination of Mantel-Haenszel \( \chi^2 \) tests and simple linear regression analyses, as appropriate, to compare hospitals’ structural characteristics across quartiles of risk-adjusted relative cost indexes (ratio of observed to expected cost of care). We then constructed multivariate models to identify hospital characteristics that were independently associated with a difference in risk-adjusted cost of care in 2006.

We examined the consistency of hospital cost of care over time in 2 ways. First, we examined the correlation of a hospital’s condition-specific relative cost index in the baseline year (2004) with its condition-specific relative cost index in 2005 and 2006. Second, we determined whether hospitals that were categorized in a specific cost-of-care quartile in 2004 were so categorized in 2005 and 2006. We also examined the correlation of hospitals’ cost ratios for CHF and pneumonia in 2006.

For additional validation of our measure of cost of care, we examined the relationship in 2006 between the condition-specific relative cost index and the risk-adjusted LOS for that condition. Risk-adjusted LOS was calculated using all covariates in the core hospital cost model except the Medicare Wage Index.

To determine the relationship between a hospital’s cost of care for a particular condition and its process quality of care and mortality rates for that condition, we calculated the mean condition-specific quality-of-care score and 30-day mortality rate within condition-specific hospital cost-of-care quartiles using 2006 cost-of-care and quality-of-care data. Mortality rate was adjusted for age, sex, race/ethnicity, and the presence or absence of comorbid conditions. To assess whether cost-of-care or quality-of-care relationships were driven by a few indicators, we also examined individual quality-of-care indicators and assessed the correlation between hospital quality-of-care and cost-of-care scores.

We also examined the relationship between index hospitalization cost of care and subsequent inpatient cost of care. For the first admission of any patient hospitalized in the first 6 months of 2006, we assessed whether the patient was readmitted for any reason to any hospital within 30 days after the index hospitalization discharge. We used the same adjustment model as for LOS (core hospital cost model, excluding the Medicare Wage Index). In sensitivity analysis, we calculated estimates using a model with patient-level covariates (age, sex, race/ethnicity, and the Elixhauser Comorbidity Index) only.

Finally, for patients hospitalized in the first 6 months of 2006, we calculated all cost of care generated by the index admission and any hospitalization initiated 180 days or less from the index admission date. We prorated cost of care for those hospitalizations that bridged the 180-day period by multiplying the total cost of care for the admission by the fraction of inpatient days that occurred up to the 180-day mark. Here again, we risk adjusted using all covariates in the core hospital cost model. In sensitivity analyses for 30-day readmission rates and for 6-month inpatient cost of care, we excluded patients who had died during the index hospitalization. All statistical analyses were performed using commercially available software (SAS version 9.1; SAS Institute, Cary, North Carolina).

RESULTS

Observed cost of care and predicted cost of care were calculated among 3146 hospitals for CHF and among 3152 hospitals for pneumonia. eTable 2 gives characteristics of the excluded hospitals.

We found large variations in hospitals’ condition-specific relative cost indexes for each of the 2 conditions. For example, hospitals in the lowest-cost quartile for CHF had adjusted cost ratios that ranged from 0.33 to 0.82, while hospitals in the highest-cost quartile for CHF had adjusted cost ratios that ranged from 1.12 to 1.89. Cost ratios for pneumonia followed a similar pattern. Converting cost ratios to US dollars, care for a typical patient with CHF (mean cost of care, $7114) could vary from $1522 if he or she was discharged from the lowest-cost hospital to $18927 if he or she was discharged from the highest-cost hospital. Similarly, cost of care for a typical patient with pneumonia (mean cost of care, $7040) could vary from $1897 to $15829 per hospitalization.

RISK-ADJUSTED COST OF CARE AND HOSPITALS’ STRUCTURAL CHARACTERISTICS

In bivariate analyses, hospitals in the lowest-cost quartile for CHF care were more often small (41.3% in the low-cost quartile vs 26.4% in the middle-cost quartiles and 20.2% in the high-cost quartile, \( P < .001 \)) (Table 1). They were also far less likely to have a cardiac intensive care unit compared with hospitals in the highest-cost quartile for CHF care (25.1% vs 33.6%, \( P < .001 \)). Hospitals in the lowest-cost quartile of CHF care also had a larger fraction of care dedicated to CHF compared with hospitals in the highest-cost quartile. The results for pneumonia care were qualitatively similar. eTable 3 gives the results of multivariate analyses of these structural characteristic predictors and their relationship to risk-adjusted cost of care.

STABILITY OF RISK-ADJUSTED COST OF CARE OVER TIME, CONSISTENCY ACROSS CONDITIONS, AND CORRELATION WITH LOS

Hospitals’ relative cost indexes were stable over time. The year-to-year correlations for a hospital’s relative cost indexes in CHF care were 0.72 between 2004 and 2005 and 0.64 between 2004 and 2006. When we categorized hospitals into quartiles of risk-adjusted cost of care, hospital rankings were fairly stable: 63.6% of high-cost hospitals were in the highest-cost quartile in 2005, and 88.8% were in the highest 2 quartiles of cost of care (Table 2). The correlations and stability of rankings were almost identical for pneumonia. The correlation coefficient examining the relationship between a hospital’s risk-adjusted cost of care for a patient with CHF and its risk-adjusted cost of care for a patient with pneumonia was 0.56 (\( P < .001 \)).

When we examined LOS, hospitals in lower-cost quartiles also had shorter LOS. For CHF, the mean LOS in the quartile with the lowest risk-adjusted cost of care was 5.4 days and increased monotonically to 6.3 days in the quartile with the highest risk-adjusted cost of care (\( P < .001 \)); for pneumonia, the comparable values were 5.9 days for the lowest-cost quartile and 7.2 days for the highest-cost quartile (\( P < .001 \)).
When we examined the relationship between a hospital's cost of care and its quality of care for a particular condition, the relationship was weak and differed by condition. The association between hospitals' cost of care and mortality rates also differed by condition (Table 3). For example, compared with hospitals in the lowest-cost quartile, hospitals in the highest-cost quartile for CHF care had a higher quality-of-care score (89.9% vs 85.5%) and lower mortality for CHF (9.8% vs 10.8%) (P < .001 for both).

In additional analyses using individual quality-of-care indicators, 3 of 4 CHF analyses (discharge instructions, left ventricular functional assessment, and smoking cessation counseling) and 3 of 7 pneumonia analyses (initial antibiotic timing, initial blood culture timing, and pneumococcal vaccination) showed statistically significant relationships in the same direction as when the composite CHF or pneumonia quality-of-care index was used. For CHF, the correlation was strongest for left ventricular functional assessment; for pneumonia, the magnitude of the correlation did not differ greatly between indicators.

### Table 1. Hospital Structural Characteristics by Congestive Heart Failure and Pneumonia Cost-of-Care Quartile (Q), 2006a

<table>
<thead>
<tr>
<th>Hospital Structural Characteristic</th>
<th>Cost-of-Care Quartile for Congestive Heart Failure</th>
<th>Cost-of-Care Quartile for Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=3146)</td>
<td>Low (Q1)</td>
</tr>
<tr>
<td>Risk-adjusted cost ratioc</td>
<td>(0.99)</td>
<td>(0.33-0.82)</td>
</tr>
<tr>
<td>Size, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (6-99 beds)</td>
<td>28.6</td>
<td>41.3</td>
</tr>
<tr>
<td>Medium (100-399 beds)</td>
<td>58.6</td>
<td>52.5</td>
</tr>
<tr>
<td>Large (≥400 beds)</td>
<td>12.8</td>
<td>6.1</td>
</tr>
<tr>
<td>Profit status, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For profit</td>
<td>18.7</td>
<td>21.4</td>
</tr>
<tr>
<td>Not-for-profit nonpublic</td>
<td>64.7</td>
<td>59.4</td>
</tr>
<tr>
<td>Not-for-profit public</td>
<td>16.6</td>
<td>19.2</td>
</tr>
<tr>
<td>Region, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>16.5</td>
<td>19.6</td>
</tr>
<tr>
<td>Midwest</td>
<td>22.5</td>
<td>18.7</td>
</tr>
<tr>
<td>South</td>
<td>42.5</td>
<td>43.4</td>
</tr>
<tr>
<td>West</td>
<td>18.4</td>
<td>18.3</td>
</tr>
<tr>
<td>Presence of cardiac intensive care unit, %</td>
<td>39.4</td>
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</tr>
<tr>
<td>Ratio of nurses to census, %d</td>
<td>6.1</td>
<td>6.0</td>
</tr>
<tr>
<td>Congestive heart failure admissions Per total admissions, %</td>
<td>6.4</td>
<td>6.8</td>
</tr>
<tr>
<td>No.</td>
<td>164.9</td>
<td>119.3</td>
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</table>

<table>
<thead>
<tr>
<th>Hospital Structural Characteristic</th>
<th>Cost-of-Care Quartile for Pneumonia</th>
<th>Cost-of-Care Quartile for Congestive Heart Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=3152)</td>
<td>Low (Q1)</td>
</tr>
<tr>
<td>Risk-adjusted cost ratioc</td>
<td>(1.00)</td>
<td>(0.37-0.86)</td>
</tr>
<tr>
<td>Size, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (6-99 beds)</td>
<td>28.7</td>
<td>35.8</td>
</tr>
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<td>58.5</td>
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<td>42.1</td>
</tr>
<tr>
<td>West</td>
<td>18.4</td>
<td>20.3</td>
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<tr>
<td>Presence of medical intensive care unit, %</td>
<td>77.4</td>
<td>70.3</td>
</tr>
<tr>
<td>Ratio of nurses to census, %d</td>
<td>6.1</td>
<td>6.0</td>
</tr>
<tr>
<td>Pneumonia admissions Per total admissions, %</td>
<td>6.5</td>
<td>6.9</td>
</tr>
<tr>
<td>No.</td>
<td>140.8</td>
<td>130.2</td>
</tr>
</tbody>
</table>

a Because of rounding, data do not total 100%.

b P value for trend for the ratio of nurses to census and for congestive heart failure or pneumonia admissions.

c Cost ratio of observed to expected cost of care for congestive heart failure or pneumonia.

dThe number of full-time equivalent registered nurses divided by the number of patient days in thousands.
RELATIONSHIP BETWEEN COST OF CARE, READMISSION RATES, AND LONG-TERM INPATIENT USE

The risk of readmission within 30 days for patients with CHF who were initially seen in the lowest-cost hospitals incurred far lower cost of care than patients having CHF who were initially seen in the highest-cost hospitals ($12 715 vs $18 411, P < .001) (Table 4). The results were similar for patients having pneumonia. In sensitivity analyses, we excluded patients who had died during the index hospitalization. Our results were materially unchanged for the readmission rates and 6-month cost-of-care analyses.

As policy makers and the public try to drive the health care system toward higher quality of care and lower cost of care, it has become critical to understand national patterns of quality of care and cost of care and their interrelations. Our study has 3 clear findings. First, hospitals’ relative cost of care seems to be stable over time, and their risk-adjusted cost of care seems to be correlated across CHF and pneumonia. Second, at least for CHF and pneumonia, the overall relationship between a hospital’s cost of care and process quality of care is small and inconsistent. The relationship between a hospital’s cost of care and mortality rates is also variable across conditions. Third, we find limited evidence to support the penny-wise and pound-foolish hypothesis. Low-cost hospitals had slightly higher readmission rates for CHF but did not generate higher hospital cost of care over time for CHF or for pneumonia.

When we summed all inpatient cost of care within 6 months of the index hospitalization, patients having CHF who were initially seen in the lowest-cost hospitals incurred far lower cost of care than patients having CHF who were initially seen in the highest-cost hospitals ($12 715 vs $18 411, P < .001) (Table 4). The results were similar for patients having pneumonia. In sensitivity analyses, we excluded patients who had died during the index hospitalization. Our results were materially unchanged for the readmission rates and 6-month cost-of-care analyses.

**COMMENT**

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The stability of hospitals’ risk-adjusted cost of care over time and the moderate correlation in costs of care for CHF and pneumonia within individual hospitals suggest that some of the variation in cost ratios between hospitals may be related to structural characteristic differences between institutions that are similar across conditions. Structural characteristics included in our data set were weak predictors of cost of care. However, our data excluded several potentially important predictors such as type of governance, extent of health information technology adoption, and degree of vertical integration with outpatient practices.
Our findings did not support the hypothesis that hospitals seeking to lower cost of care by discharging patients earlier ultimately use more hospital resources over time. Although low-cost hospitals had about 20% shorter LOS, their patients had comparable or marginally higher readmission rates and substantially lower 6-month total inpatient cost of care. Therefore, our findings suggest that initial lower hospital cost of care may not have a deleterious effect on long-term inpatient use.

Investigators from Dartmouth Medical School (Hanover, New Hampshire) and others have studied the relationship between cost of care and quality of care, but research has generally been performed on a regional basis. Other hospital studies of the relationship between cost of care and quality of care have relied on gross measures of quality of care such as medical staff certification, outpatient follow-up after discharge, peer reputation, complication rates, and mortality rates rather than the detailed process measures we included. Their findings on the direction and magnitude of the association have been inconsistent. Prior studies of hospitals' mean LOS and readmission rates have also failed to disclose a relationship. We are unaware of any previous studies that have examined the penny-wise and pound-foolish hypothesis directly and assessed whether hospitals with lower cost of care or shorter LOS incur higher downstream and total inpatient cost of care.

There are several limitations to our findings. We confined our analysis to Medicare beneficiaries and examined care for only 2 clinical conditions. Medicare beneficiaries made up 37.3% of all hospital discharges in 2006, and CHF and pneumonia were the top 2 principal diagnoses (5.7% and 5.0%, respectively) of all Medicare discharges. Our findings did not support the hypothesis that hospitals seeking to lower cost of care by discharging patients earlier ultimately use more hospital resources over time. Although low-cost hospitals had about 20% shorter LOS, their patients had comparable or marginally higher readmission rates and substantially lower 6-month total inpatient cost of care. Therefore, our findings suggest that initial lower hospital cost of care may not have a deleterious effect on long-term inpatient use.
to inpatient use. This cost of care makes up the largest proportion of total health care expenditure,27 but our inability to capture follow-up data in outpatient or emergency department visits and long-term care limits the scope of our findings. Caution should be used in applying our results to all hospitals. We excluded approximately one-third of nonfederal hospitals as their structural characteristics differed from those of the included hospitals. Our approach to risk adjustment relied on administrative data that have well-known limitations in terms of clinical detail; in particular, they do not measure disease severity. However, these data are now routinely used by the Centers for Medicare and Medicaid Services to publicly profile and monitor hospital quality of care. Finally, our analyses were observational and cross-sectional. They permit us to determine associations, but we cannot draw any conclusions about causality.

In summary, risk-adjusted costs of care for CHF and pneumonia varied widely between hospitals, although hospital cost-of-care patterns seemed stable over time and correlated across conditions. The associations between cost of care and process quality of care and between cost of care and mortality rates differed across conditions. Most evidence did not support the penny-wise and pound-foolish hypothesis that low-cost hospitals discharge patients earlier, only to increase readmission rates and incur greater inpatient cost of care over time.

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Correspondence: Lena M. Chen, MD, MS, Division of General Medicine, Department of Internal Medicine, University of Michigan, 300 N Ingalls, Room 7-C17, Ann Arbor, MI 48109 (lenac@umich.edu).

Author Contributions: Dr Chen had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the analysis. Study concept and design: Jha, Guterman, and Epstein. Acquisition of data: Jha and Epstein. Drafting of the manuscript: Chen, Jha, and Epstein. Critical revision of the manuscript for important intellectual content: Chen, Jha, Guterman, Ridgway, Orav, and Epstein. Statistical analysis: Chen, Jha, Orav, and Epstein. Obtained funding: Jha and Epstein. Study supervision: Jha, Orav, and Epstein.

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REFERENCES