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Achieving the High-Value Colectomy: Preventing Complications or Improving Efficiency

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Abstract

Background—There is increased focus on the value of surgical care. Postoperative complications decrease value, but it is unknown whether high-value hospitals spend less than low-value hospitals in cases without complications. Previous studies have not evaluated both expenditures and validated outcomes in the same patients, limiting the understanding of interactions between clinical performance, efficient utilization of services, and costliness of surgical episodes.

Objective—To identify payment differences between low- and high-value hospitals in colectomy cases without adverse outcomes using a linked dataset of multipayer claims and validated clinical outcomes.

Design—Retrospective observational cohort study. We assigned each hospital a value score (ratio of cases without adverse outcome to mean episode payment). We stratified hospitals into tertiles by value and used ANOVA to compare payments between low- and high-value hospitals, first for all cases, and then cases without adverse outcome.

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Setting—January 2012 to December 2016, using clinical registry data from 56 hospitals participating in the Michigan Surgical Quality Collaborative, linked with 30-day episode payments from the Michigan Value Collaborative.

Patients—2,947 elective colectomy patients.

Outcome Measures—Risk-adjusted, price-standardized 30-day episode payments.

Results—Mean adjusted complication rate was 31% (+/−10.7%) at low-value hospitals and 14% (+/−4.6%) at high-value hospitals ($p<0.001$). Low-value hospitals were paid \$3,807 (17%) more than high-value hospitals, (\$22,271 vs. \$18,464, $p<0.001$). Among cases without adverse outcome, payments were still \$2,257 (11%) higher in low-value hospitals (\$19,424 vs. \$17,167, $p=0.04$).

Limitations—This study focused on outcomes and did not consider processes of care as drivers of value.

Conclusions—In elective colectomy, high-value hospitals achieve lower episode payments than low-value hospitals for cases without adverse outcome, indicating mechanisms for increasing value beyond reducing complications. Worthwhile targets to optimize value in elective colectomy may include enhanced recovery protocols or other interventions that increase efficiency in all phases of care.

Keywords

value-based reimbursement; colectomy; complications; value; bundled payments; surgical quality

Introduction

Both private and federal payers have increasingly focused on healthcare payment reforms emphasizing quality, cost, and value, rather than merely volume of care. Value represents the relationship between quality and spending, and it has been defined by economist Michael E. Porter and others as the ratio of health outcomes achieved to the costs of care.^{1,2} With the advent of episode-based bundled reimbursement programs, such as the Centers for Medicare and Medicaid Services (CMS) Comprehensive Care for Joint Replacement and Bundled Payments for Care Improvement – Advanced³, surgeons and hospitals will increasingly bear responsibility for the total costs of surgical episodes, including the hospitalization and post-discharge care utilization for the subsequent 90 days.⁴ Before this focus on value, surgical research had traditionally focused on improving the quality of surgical care, measured most commonly by the occurrence of postoperative complications.⁵ Postoperative complications are not only a metric of surgical outcome, but also a primary determinant of spending and healthcare utilization after surgery.^{6–12} As such, most surgical quality initiatives have emphasized the prevention of costly complications as the strategy for value improvement.

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Because few analyses have ever linked validated risk-adjusted clinical outcomes with real adjudicated payments for complete episodes around surgical care, there is little understanding of the ways that hospitals achieve high value care, whether through prevention of complications, or judicious use of discretionary services (such as home nursing care). Because complications after high-risk surgery are costly, it may be that

episode value is determined predominantly by the patients who do have a complication, and measures to prevent adverse outcomes after surgery will continue be prioritized. On the other hand, the majority of patients do not experience a postoperative complication, even for relatively morbid procedures such as colectomy or pancreatectomy.^{18,19} There may be important targets for reducing potentially unnecessary spending even among these patients without an adverse outcome.²⁰ For example, hospitals that succeeded in recent federal bundled reimbursement programs achieved savings primarily through reductions in the use of high-cost institutional post-acute care.^{21–23} Thus, a clear understanding of the roles of both complication avoidance and the efficiency of care will inform strategies for success in bundled payments for both hospitals and policy makers.

In this study, we assess the relationship between value, complications, and episode payments in a population-based cohort of patients undergoing elective colectomy, a common, relatively morbid procedure. We used a unique data source of validated clinical data linked with episode payment data from two statewide surgical collaboratives. We then identified hospitals that performed low- versus high-value colectomy according to Porter's "value equation," a ratio of quality to cost.² We compared payments between low- and high-value hospitals 1) in all cases, and 2) only cases without adverse outcome. We hypothesized that high-value hospitals would not only incur fewer complications and achieve lower average payments overall, but also further achieve lower average spending among cases without adverse outcomes, indicating that high-value hospitals were achieving both high-quality outcomes and more efficient care.

Materials and Methods

Overview

For this study, we wished to decompose Porter's "value equation" into its components of quality and cost, to understand whether complications (which affect both quality and cost) are the sole determinant of value. For this reason, hospitals were assigned a value score based on adverse events (quality) and payments (cost), as explained in further detail below. If complications were the primary driver of value, we would expect payments for patients *without* adverse outcomes to be the same at both low- and high-value hospitals. In this case, high-value hospitals would primarily achieve value by having fewer complications, thus reducing overall spending. The relationship between value and its components can thus be better understood by comparing payments in the patients without adverse outcomes.

Data Source

We performed a retrospective cohort study using clinical registry data from the Michigan Surgical Quality Collaborative (MSQC) linked with 30-day episode payment data from the Michigan Value Collaborative (MVC). The University of Michigan Institutional Review Board deemed this work exempt from review.

The method of clinical data abstraction and patient sampling for both the MSQC and the MVC have been described in greater detail previously.⁸ The MSQC is a collaborative quality improvement program of 72 Michigan hospitals that maintains a clinical registry for specific

general surgery, vascular, and gynecological operations across a statewide population. Cases are sampled for data abstraction using an algorithm to minimize selection bias, and approximately 50,000 cases are sampled per year. Nurses trained in data abstraction review charts and collect patient characteristics, perioperative processes of care, and 30-day postoperative outcomes. MSQC data is audited regularly to ensure validity.

The MVC is a collaborative of 78 Michigan hospitals that maintains a registry of complete claims payments from Medicare fee-for-service and Blue Cross Blue Shield of Michigan Preferred Provider Organization (PPO). Claims data surrounding an entire episode of care for 25 medical and surgical conditions are collected.^{24,25}

Study Population

Our objective was to form a linked cohort of colectomy patients with both MSQC and MVC data. The MSQC represents a sample of patients undergoing operations in the state, while the MVC represents a segment of that sample (cases with a specific payer). First, we included all adult patients (age >18) undergoing elective colectomy in the MSQC from January 1, 2012 to December 31, 2016. We used this time period because both MSQC and MVC data were available during these years. We then performed probabilistic matching between MSQC and MVC cases. As MSQC cases are deidentified, we matched cases using patient date of birth, CPT code, insurance payer, date of admission, and hospital.

We excluded urgent and emergent operations, as adverse outcomes in these cases are more frequent and may be less avoidable by physicians and hospitals, and care pathways may differ from those of planned operations.^{26,27} Since the study used hospital-level analyses, we excluded patients from hospitals who performed fewer than 10 total cases over the study period.

Value Score

First, we assigned each hospital a value score (V), according to the Porter definition: value = quality (Q) divided by cost.²

$$Q = (\text{patients without adverse outcome}) / (\text{total patients}) * 100$$

$$V = (Q / \text{average episode payments in thousands})$$

We defined quality as the percentage of cases without any of the following adverse outcomes: postoperative complication, unplanned reoperation, or mortality. Outcome rates were unadjusted. MSQC-defined postoperative complications included any of the following: surgical site infection (superficial, deep, and organ space), urinary tract infection (catheter-associated or spontaneous), pneumonia, unplanned intubation, pulmonary embolism, acute renal failure, intraoperative or postoperative transfusion, stroke or cerebrovascular accident, cardiac arrest requiring cardiopulmonary resuscitation, acute myocardial infarction, cardiac dysfunction, deep venous thrombosis requiring therapy, sepsis, septic shock, *Clostridium difficile* infection, central line infection, and anastomotic leak.

For cost, we used each hospital's mean price standardized and risk-adjusted episode payment (in thousands of dollars). Payments are price standardized using established algorithms that account for intentional payment differences for graduate medical education and proportion of uncompensated care, and they are inflation-adjusted according to the 2012 Medicare payment schedule.²⁸ Payment data are risk-adjusted using generalized mixed linear models to generate expected payments for each patient, accounting for patient factors and Hierarchical Condition Categories. For each hospital, average risk-adjusted episode payments are generated by calculating the total observed payments divided by total expected payments, multiplied by the mean payments of the entire cohort. For this study, total episode payments were winsorized to the 99th percentile (all payments above the 99th percentile were set to the 99th percentile) to account for extreme outliers, which is a method used by CMS.²⁹

Hospitals were then stratified by value score into tertiles of low-, mid-, and high-value hospitals.

Outcome and Explanatory Variables

The primary outcome was price-standardized and risk-adjusted average episode payment for each hospital. The explanatory variable of interest was the value tertile of each hospital.

Statistical Analysis

First, we analyzed the differences between hospitals in each value tertile, including patient demographics, comorbidities, hospital characteristics, risk-adjusted length of stay (LOS), Emergency Department (ED) visit rates, readmission rates, and complication rates. All clinical outcomes were collected within 30 days of the operation. Risk-adjusted outcome rates were obtained using logistic regression to adjust for the following patient factors and comorbidities: age (< 45 years, 45 – 64 years, 65+ years), sex, race (white, black, other), insurance type (private, Medicare, Medicaid, self-pay, uninsured, and other), obesity (BMI >30 kg/m²), tobacco use within 1 year, history of alcohol abuse, functional status, ASA classification, diabetes, chronic obstructive pulmonary disease, hypertension, congestive heart failure, bleeding disorder, peripheral vascular disease, ascites, history of immunosuppression, and >10% body weight loss.

Operations were collapsed into the following groups: open partial colectomy (CPT codes 44140, 44145, 44147, 44160, 44141, 44143, 44144, 44146); laparoscopic partial colectomy (44204, 44205, 44206, 44207, 44208), open total colectomy (44150, 44151, 44155, 44156, 44157, 44158), and laparoscopic total colectomy (44210, 44211, 44212). Presence of an ostomy was defined using CPT codes 44141, 44143, 44144, 44146, 44150, 44151, 44155, 44156, 44157, 44158, 44206, 44208, 44210, 44211, and 44212.

Differences in patient and hospital characteristics between tertiles were assessed using Pearson's Chi-Squared tests for categorical variables and one-way analysis of variance (ANOVA) for continuous variables. Pearson's correlation coefficient was used to evaluate the association between a hospital's volume (number of patients) and value score (V).

For our primary analysis, we compared episode payments between the low-, mid-, and high-value tertiles using ANOVA, including payment components such as the index hospitalization, professional fees, readmissions, and post-discharge care. We then repeated this analysis using only patients who did not experience an adverse event, as well as those who did experience an adverse event. As payment data were already risk-adjusted, we did not repeat multivariable adjustment when comparing payments between hospital tertiles.

A sensitivity analysis was performed using bootstrapping to obtain the mean differences and 95% confidence intervals for payments between hospital tertiles. Since cost and payment data are generally positively skewed toward high outliers, parametric statistics may not be appropriate. Bootstrapping allows asymmetric confidence intervals to be obtained.^{30,31} All analyses were performed using StataSE version 15 (Stata Corp, Houston, Texas). All statistical tests were two-sided with a significance threshold of $P < 0.05$.

Results

Characteristics of the cohort

We identified 2,986 patients in the linked MSQC/MVC cohort who underwent elective colectomy in 2012 – 2016. We then excluded 39 patients from 9 hospitals who performed fewer than 10 cases. In total, 2,947 (98.7%) patients from 56 hospitals were included in the study. Of these patients, 646 (22%) experienced an adverse outcome and 2,301 (78%) did not.

Hospital-level characteristics between value tertiles are summarized in Table 1. The mean number of patients per hospital was 52 (range 10 – 165). The correlation between hospital volume and value score (V) was weak but statistically significant ($r = 0.195$, $p < 0.001$). There were no differences in hospital bed size or teaching status between the tertiles. There were no major differences in operation type. Across all hospitals, the overall unadjusted rate of adverse outcome (complication, reoperation, or mortality) was 21.9%, and was significantly higher at low-quality hospitals (30.5% [± 10.7], $p < 0.001$) compared to high-quality hospitals (14.4% [± 4.6]). High-quality hospitals had lower risk-adjusted rates of superficial, deep, and organ space SSI, pneumonia, unplanned intubation, urinary tract infection, myocardial infarction, cardiac dysfunction, transfusion, deep venous thrombosis, and sepsis.

Length of stay (LOS) was 7.7 (± 2.4) days at low-value hospitals compared to 6.3 (± 1.0) days at high-value hospitals ($p = 0.02$). ED visit rate was 8.9% across the tertiles ($p = 0.07$). Low-value hospitals had a readmission rate of 16.3% (± 10.4), while high-value hospitals achieved an 8.3% (± 4.3) readmission rate ($p = 0.005$). Among the 2,301 patients who did not have an adverse outcome, readmission rates between low- and high-value hospitals followed the same pattern, but there was not a significant difference (8.6% [± 11.6] vs. 4.6% [± 3.0], $p = 0.17$).

Differences in episode payments between value tertiles

For low-value hospitals, the mean (SD) episode payment in all patients was \$22,271 ($\pm$ \$2,394), compared to \$18,864 ($\pm$ \$1,390) for high-value hospitals, a difference of \$3,807, or 17% ($p < 0.001$) (Table 2). Differences were statistically significant across all components of

the episode: low-value hospitals had significantly higher payments than high-value hospitals for the index hospitalization (\$15,939 vs. \$13,818, $p=0.001$), professional fees (\$3,301 vs. \$2,580, $p=0.004$), readmissions (\$1,601 vs. \$1,044, $p=0.02$), and post-discharge payments (\$1,819 vs \$1,164, $p<0.001$).

Differences in episode payments in patients with and without adverse outcome

In the 2301 patients without an adverse outcome, low-value hospitals had significantly higher payments compared to high-value hospitals (\$19,424 [$\pm$ \$4,186] vs \$17,167 [$\pm$ \$1,492], $p=0.04$) (Table 3). This difference amounted to \$2,257, or a 12% savings, primarily in the index hospitalization. The differences in payments between hospital tertiles both overall and in patients without adverse outcome are shown in Figure 1. In the 646 patients who did experience an adverse outcome, there was not a significant difference in payments between low- and high-value hospitals (\$28,194 [$\pm$ \$3,078] vs. \$26,224 [$\pm$ \$6,581], $p=0.37$). On sensitivity analysis using bootstrapping, we obtained similar results for all patients and patients with and without adverse outcome.

Discussion and Conclusion

In this study of linked clinical and payment data, we used hospital complication rates and mean episode payments to characterize each hospital's value in elective colectomy. We then ranked hospitals by value and found that high-value hospitals had lower episode payments, fewer complications, and fewer readmissions than low-value hospitals, even after adjusting for case mix. However, when only cases without adverse outcome were compared, high-value hospitals still achieved 12% lower episode payments. This finding suggests that high-value hospitals employ a variety of strategies to improve value, including both avoidance of complications and judicious use of other costly services in the perioperative period. While complications are a major driver of both cost and quality, prudent use of discretionary services appears to be another key factor among hospitals achieving highest value in episodes around colectomy.

Our findings reinforce previous evidence that postoperative complications do not fully explain variation in healthcare utilization. In studies using extended LOS as a proxy for resource utilization, postoperative complications are only weakly correlated with extended LOS, and a significant proportion of patients with extended LOS do not have documented complications.^{32–34} One study in laparoscopic cholecystectomy found that while both complications and readmissions increased total episode payments, reducing readmissions and increasing the use of ambulatory surgical centers would result in significantly more cost savings than reducing complications.³⁵ Spending differences in patients without complications, especially during the index hospitalization, may be related to reductions in testing, imaging, or other areas of discretionary practice.

Restructured federal reimbursement strategies, such as bundled payment initiatives, shift financial risk to providers and hospitals and are gaining increased momentum. Our findings indicate that episode-based reimbursement strategies could incentivize high-value care both through improving outcomes and reducing discretionary spending. Under a bundled payment model, it could be worthwhile for hospitals to invest resources to improve care

coordination around the index hospitalization, such as enhanced recovery protocols, to achieve savings even in cases without adverse outcomes. In addition, we found that increased hospital colectomy volume was only weakly correlated with high value, suggesting that even low-volume hospitals can achieve high-value surgical care by reducing complications and increasing efficiency.

The strengths of this study include the use of linked data from both a clinical and an administrative claims registry, addressing key shortcomings of each data source. For example, claims databases include only comorbidities and complications that reflect billing practices, rather than clinically validated measures. Clinical outcomes data from the MSQC are collected and validated by trained data abstractors, allowing us to reliably risk-adjust based on clinical factors. Having validated postoperative outcomes recorded in the clinical data also enabled us to reliably stratify patients by the presence of an adverse outcome and compare payments for these patients. As another strength, we used episode payment data, rather than hospital charges or costs converted from charge data. Hospital charges are highly inflated and are known to be inaccurate, while costs may be difficult to identify, as they include direct costs of supplies and indirect costs of labor or professional time.³⁶ However, payments reflect the actual amount reimbursed by payers, representing the cost incurred by society for the total episode of care, including readmissions or other events after discharge. Payment data are price-standardized to adjust for differences in negotiated reimbursement rates and regional wage variation between hospitals.²⁸ These findings are likely widely generalizable, as they include both Medicare beneficiaries over age 65 and commercially-insured patients under age 65.

Our study has several important limitations. As this was a hospital-level analysis, small numbers of cases per hospital could affect the reliability of our results, as complication rates and payments at a hospital with few cases could be biased by a few outliers. To address this, we excluded hospitals with 10 or fewer cases. We also used a composite adverse outcome, composed of any postoperative complication, reoperation, or mortality, which does not distinguish between complications like urinary tract infection versus cardiac arrest. Although there may be varying effects of each adverse outcome depending on severity, we were limited by the relative infrequency of each isolated outcome. In addition, even relatively minor complications are costly and important contributors to overall value--urinary tract infection, surgical site infection, or venous thromboembolism may increase episode payments by over \$8000 in elective spine surgery, bariatric surgery, and cardiothoracic surgery.³⁷ Finally, we used health outcomes alone to define value, excluding process measures of clinical quality, or patient-reported functional outcomes. Examining hospital differences in these measures may shed light on some of the processes by which high-value hospitals delivered better care.

In conclusion, this study demonstrates that hospitals that perform high-value colectomy have fewer adverse outcomes, but also deliver more efficient care in cases with good outcome. Hospitals should improve clinical processes as well as outcomes to meet financial pressures under alternative payment models. Studying the processes of care in place at high-performing hospitals may lead to strategies for care coordination at other institutions. Such

findings could be used to design value-based reimbursement arrangements for complex operations such as colectomy.

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Figure 1.

Total Episode Payments by Hospital Value Tertile. *, $p < 0.05$. **, $p < 0.001$. High-value hospitals achieved lower episode payments overall. When only patients without adverse outcome were considered, payments at high-value hospitals were still significantly lower than those at low-value hospitals.

Table 1.

Hospital characteristics and outcomes across value tertiles.

	Hospital Value Tertile			
	Low-value	Mid-value	High-value	p-value
Hospitals N (number)	19	19	18	
Patients N (mean [SD])	47 (29)	56 (27)	55 (41)	0.49
% Medicare patients (mean per hospital)	68 (14)	67 (7)	64 (14)	0.31
Structural Characteristics				
Beds				0.85
Fewer than 100	6 (32%)	4 (21%)	3 (17%)	
100 – 199	3 (16%)	6 (32%)	2 (11%)	
200 – 299	2 (11%)	2 (11%)	3 (17%)	
300 – 399	3 (16%)	4 (21%)	3 (17%)	
400 – 499	2 (11%)	1 (5%)	3 (17%)	
500 or more	3 (16%)	2 (11%)	4 (22%)	
Teaching (%)	11	16	17	0.59
Clinical Characteristics				
LOS (days)	7.7 ± 2.4	7.7 ± 1.4	6.3 ± 1.0	0.02
LOS in patients without adverse outcome	7.2 ± 3.5	6.7 ± 1.0	5.8 ± 0.7	0.16
ED visit rate (%)	11.5 ± 11.7	8.9 ± 5.4	6.1 ± 3.0	0.07
ED visit rate in patients without adverse outcome (%)	9.1 ± 2.4	7.1 ± 4.9	5.5 ± 3.3	0.25
Readmission rate (%)	16.3 ± 10.4	9.5 ± 4.8	8.3 ± 4.3	0.005
Readmission rate in patients without adverse outcome (%)	8.6 ± 11.6	3.9 ± 4.0	4.6 ± 3.0	0.17
Overall Adverse Outcome Rate (%)	30.5 ± 10.7	21.3 ± 3.9	14.4 ± 4.6	<0.001
Unplanned reoperation rate (%)	9.1 ± 2.9	6.1 ± 3.3	3.9 ± 3.2	<0.001
Mortality rate (%)	0.9 ± 1.4	1.3 ± 1.9	0.6 ± 1.1	0.50
Risk-adjusted complication rates (%)				
Superficial SSI	5.7 ± 5.9	3.4 ± 3.3	1.6 ± 1.7	0.009
Deep or Organ Space SSI	4.7 ± 4.1	3.0 ± 2.3	1.7 ± 2.1	0.008
Pneumonia	2.6 ± 3.6	1.8 ± 2.1	0.7 ± 1.0	0.04
Unplanned intubation	2.4 ± 2.4	1.5 ± 1.9	0.7 ± 1.2	0.009
Pulmonary embolism	0.5 ± 0.8	0.5 ± 1.0	0.5 ± 1.1	1.0
Acute renal failure	2.9 ± 3.6	2.6 ± 1.7	1.3 ± 1.6	0.09
Urinary tract infection	3.5 ± 2.5	2.4 ± 2.3	1.2 ± 1.5	0.002
Stroke	0	0.4 ± 0.8	0	n/a
Cardiac arrest	0.4 ± 1.0	0.6 ± 1.5	0.5 ± 1.0	0.72
Myocardial infarction	1.1 ± 1.4	0.5 ± 1.0	0.3 ± 0.8	0.04
Cardiac dysfunction	4.9 ± 7.1	2.4 ± 1.9	1 ± 2.0	0.03
Transfusion	7.1 ± 5.4	5.1 ± 3.9	3.7 ± 2.6	0.02
Deep venous thrombosis	2 ± 3.4	0.8 ± 1.1	0.2 ± 0.5	0.04

	Hospital Value Tertile			
	Low-value	Mid-value	High-value	p-value
Sepsis	7.8 ± 6.6	3.3 ± 3.3	2.2 ± 3.0	0.003
C. difficile infection	1.9 ± 3.5	1.3 ± 2.0	0.9 ± 1.6	0.27
Central line infection	0.08 ± 0.3	0	0	0.33
Anastomotic leak	4 ± 4.8	2.1 ± 2.8	2.6 ± 2.7	0.31

LOS: length of stay. ED: Emergency Department. SSI: surgical site infection.

Table 2.

Total episode payments and components by value tertile.

	Low-value	Mid-value	High-value	p-value	Difference between low- and high-value hospitals
Hospitals N	19	19	18		
Patients N (mean)	47	56	55		
Total payments (\$)	22271 ± 2394	19845 ± 1192	18464 ± 1390	<0.001	\$3,807
Index (\$)	15939 ± 2375	14777 ± 1105	13818 ± 797	<0.001	\$2,121
Physician Services (\$)	3031 ± 477	2675 ± 346	2580 ± 425	0.004	\$451
Readmissions (\$)	1601 ± 758	1019 ± 584	1044 ± 653	0.02	\$557
Post-Acute Care (\$)	1819 ± 540	1392 ± 368	1164 ± 502	<0.001	\$655
Rehabilitation (\$)	429 ± 492	234 ± 265	264 ± 578	0.38	\$165
SNF (\$)	1818 ± 540	1392 ± 368	1163 ± 502	<0.001	\$655
Home Health Services (\$)	557 ± 242	584 ± 237	373 ± 215	0.02	\$184

Rehabilitation includes inpatient and outpatient treatment. SNF, skilled nursing facility. Post-acute care includes rehabilitation, SNF, and home health services payments.

Table 3.

Total episode payments and components by value tertile in patients without adverse outcome.

	Low-value	Mid-value	High-value	P-value	Difference between low- and high-value hospitals
Hospitals N (number)	19	19	18		
Patients N (mean)	32 ± 20	44 ± 21	47 ± 36	0.21	
Total payments(\$)	19424 ± 4186	17906 ± 1476	17167 ± 1492	0.04	\$2,257
Index(\$)	15366 ± 4946	14063 ± 1275	13442 ± 901	0.15	\$1,924
Physician services(\$)	2631 ± 491	2425 ± 382	2417 ± 457	0.26	\$214
Readmissions(\$)	544 ± 648	280 ± 259	454 ± 595	0.30	\$90
Post-Acute Care (\$)	1195 ± 543	1165 ± 381	916 ± 474	0.15	\$279
Rehabilitation(\$)	151 ± 313	148 ± 279	167 ± 553	0.99	-\$16
SNF(\$)	1195 ± 543	1165 ± 381	916 ± 474	0.15	\$279
Home Health Services(\$)	441 ± 272	485 ± 211	325 ± 238	0.13	\$116