

Evolution of the Medicare IPPS to a Hospital Episode-of-Care Payment System

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Executive Summary

An evolution of the Medicare Inpatient Prospective Payment System (IPPS) to a hospital episode-of-care payment system would expand hospital responsibility to include the selection of the most appropriate care setting and the services delivered during the post-discharge period. This study identified seven measures of unnecessary or preventable quality or delivery system failures (EPMs) that are major drivers of hospital-related costs. A national best practice standard was determined for each of the seven EPMs based on the performance of best-performing hospitals that comprise 50% of Medicare inpatient admissions. The extent of variation from the national best practice standard for each of the EPMs was used to adjust the standard IPPS hospital payment amount, thereby creating the equivalent of a hospital episode-of-care payment system, referred to as E-IPPS. Medicare IPPS payments to hospitals are currently adjusted under three separate quality-related programs: Hospital Acquired Condition Reduction Program (HACRP), Hospital Readmission Reduction Program (HRRP) and Hospital Value-Based Purchasing (VBP) Program, collectively referred to as IPPS+Q. Using 2018 IPPS data, the payment impact of E-IPPS and IPPS+Q was compared.

Under IPPS+Q, the estimated net aggregate hospital payment adjustment is a penalty of \$946 million constituting 0.833% of total IPPS hospital payments. Across the seven EPMs, hospitals exceeded EPM best practice performance by a net difference of \$6.0 billion. To configure an E-IPPS payment system with a payment impact that is roughly comparable to IPPS+Q, an EPM penalty cap of 0.3% of total Medicare payments to a hospital and an EPM bonus cap of 1.0% of total Medicare payments to a hospital was applied to each of the seven EPMs (maximum penalty for a hospital of 2.1%). After applying the penalty and bonus caps, the E-IPPS estimated net aggregate hospital payment adjustment is a penalty of \$955 million constituting 0.841% of total IPPS hospital payments

Today, as the Medicare trust fund once again approaches insolvency, policymakers should consider an expansion of IPPS incentives beyond the services delivered during an inpatient stay. By including a broader bundle of services that encompass care decisions and services prior to and after the inpatient stay, IPPS can be transformed into a hospital episode-of-care payment system.

Under IPPS+Q, 80.5% of hospitals had a penalty and under E-IPPS, 62.0% of hospitals had a penalty, demonstrating that there are substantial payment impact differences between E-IPPS and IPPS+Q across patient populations and types of hospitals. In analyzing patient socioeconomic status (SES), the percent of total IPPS hospital payments in penalties for hospitals caring for lower SES patients compared to hospitals caring for higher SES patients was 7.7% lower for E-IPPS, but 51% higher for IPPS+Q. Across different types of hospitals, the analysis revealed a general pattern that under E-IPPS, teaching hospitals, high Disproportionate Share Hospitals and rural hospitals have a lower percent of total IPPS hospital payments in penalties than under IPPS+Q. Large-size hospitals and large urban hospitals have a higher percent of total IPPS hospital payments in penalties under E-IPPS than under IPPS+Q.

An EPM-based payment adjustment provides policymakers with numerous options for focusing incentives. To achieve specific savings levels, policymakers can establish a variety of parameters, such as the number of individual EPMS included in the payment adjustment, the subset of hospitals included in the best-practice EPM norms, caps on the magnitude of the bonus or penalty for an individual EPM, and a cap on the net overall EPM bonus or penalty to a hospital. In addition, the cap on the magnitude of the bonus or penalty could be set to a different value for some EPMS, for some types of hospitals or for specific patient populations.

The underlying payment system designs of E-IPPS and IPPS+Q are quite different. E-IPPS sets a clinically credible performance standard for each EPM by type of patient and adjusts payment levels in direct proportion to hospital performance relative to the EPM best practice performance standard. E-IPPS replicates the successful IPPS design and transforms IPPS to a hospital bundled episode-of-care payment system that can be a viable alternative to the existing HACRP, HRRP and VBP systems.

Introduction

The 1983 implementation of the Medicare Inpatient Prospective Payment System (IPPS) resulted in dramatic reductions in Medicare hospital expenditures¹ and extended the solvency of the Medicare Part A hospital insurance trust fund for nearly 40 years. IPPS reformed hospital payment by paying hospitals for inpatient services based on an all-inclusive fixed price payment bundle for each type of admission. The fixed price payment bundle provided a strong financial incentive for hospitals to control costs.

Today, as the Medicare trust fund once again approaches insolvency,² policymakers should consider an expansion of IPPS incentives beyond the services delivered during an inpatient stay. By including a broader bundle of services that encompass care decisions and services prior to and after the inpatient stay, IPPS can be transformed into a hospital episode-of-care payment system. The evolution of IPPS to a hospital episode of care payment bundle would make hospitals responsible for selection of the most appropriate care setting and require greater hospital accountability for patient care during the post-acute care period.

Service Volume, Quality and Delivery System Effectiveness

The IPPS all-inclusive fixed price payment bundle controls the unit cost of a hospital admission, yet provides no incentives to control the volume of admissions or other services related to a hospitalization.³ Total cost is unit cost times volume. In health care, the volume of services (cost) and quality of care and delivery system effectiveness are inextricably connected. An excess volume of hospital-related services is often the result of quality-of-care problems and delivery system ineffectiveness. Quality failures and delivery system ineffectiveness can result in a greater volume of hospital-related services to correct the quality or delivery system problem. For example, a patient discharged from a hospital too quick or too sick (poor quality) may lower inpatient hospital costs but can lead to an avoidable readmission or emergency department visit, resulting in a net increase in payments. This perverse financial incentive is a result of the failure to provide effective incentives to improve quality of care and delivery system effectiveness as a means of controlling the volume of services associated with a hospitalization.

Expanding the IPPS Payment Bundle

In IPPS, the Diagnosis Related Groups (DRGs) are used as the unit of payment.³ The DRG price creates a clinically credible performance standard for each type of patient. It would be a challenge to revise the DRG payment amount to encompass services beyond those delivered during the inpatient stay. The diversity of services that relate to the need for hospital admission and the care delivered during the post-acute care (PAC) period makes it difficult to establish an all-inclusive hospital episode-of-care payment amount.⁴ For example, a preventable readmission would be an obvious quality failure to include in a hospital episode-of-care payment bundle, but readmissions can be very expensive and sometimes even exceed the cost of the original hospitalization. Inclusion of the full cost of a readmission in a hospital episode-of-care payment bundle would cause hospitals to suffer a large loss on any patient who has a readmission, thereby creating extreme financial risk for hospitals. Extreme financial risk distorts behavior by shifting the focus from effective care management to avoiding risk.

An alternative approach to an all-inclusive hospital episode-of-care payment bundle would be to identify the unnecessary or preventable quality or delivery system failures that are the major drivers of hospital-related costs and determine the level of performance variation from national standards. The extent of performance variation can be used to adjust the standard DRG payment amount, thereby creating incentives that are equivalent to a hospital episode-of-care payment bundle. A separate payment adjustment for each type of unnecessary or preventable quality or delivery system failure would provide hospitals with more precise comparative management information than a single hospital episode-of-care payment amount. To be effective, payment system incentives for quality and delivery system improvement must be based on clinically credible performance standards with payment levels adjusted based on variation from those performance standards.

An excess volume of hospital-related services is often the result of quality-of-care problems and delivery system ineffectiveness. Quality failures and delivery system ineffectiveness can result in a greater volume of hospital-related services to correct the quality or delivery system problem.

Setting performance standards for quality and delivery system effectiveness is fundamentally different than setting a financial performance standard such as the DRG price. Incentives that are effective in improving quality of care and delivery system performance must only apply to those beneficiaries whose clinical circumstances indicate there is reasonable likelihood that the quality problem or delivery system failure could have been prevented (e.g., readmission for a post-op wound infection following orthopedic surgery). Improved performance requires real behavior change, so measures of quality and delivery system effectiveness must be clinically credible and actionable. Behavior change is unlikely if the evaluation of quality and delivery system effectiveness includes patient outcomes over which a hospital has no influence or control (e.g., readmission for an appendectomy following orthopedic surgery). Ultimately, the performance improvement process must include clinical review of the care given to individual patients on a case-by-case basis. If hospitals are held accountable for patient outcomes that are clearly beyond their control and for which they have no realistic ability of preventing, the quality improvement process breaks down and becomes ineffective.

Existing IPPS Payment Adjustments for Quality and Delivery System Effectiveness

The Centers for Medicare and Medicaid Services (CMS) has essentially been transitioning IPPS to a hospital episode-of-care bundled payment system, as evidenced by The Hospital Acquired Condition Reduction Program (HACRP),⁵ Hospital Readmission Reduction Program (HRRP)⁶ and Hospital Value-Based Purchasing Program (VBP),⁷ which all adjust DRG payment amounts based on hospital performance. Unfortunately, these programs are narrowly focused and are generally penalty-only (HACRP, HRRP). They can have disproportionate penalties and often apply to patients for whom the quality or delivery system failure cannot be controlled or influenced by the hospital. For example, the current payment adjustment for readmissions under HRRP is limited to just a few clinical areas and is “all-cause,” so readmissions over which a hospital has no reasonable control are included.⁸ The Medicare hospital VBP system has largely failed to produce significant savings or improve quality of care⁹ because it is based on a constantly changing multitude of performance measures, which are combined into a payment adjustment that is complex and difficult for hospitals to understand. Hospitals have criticized these programs as overlapping and inconsistent in their scoring methods. Because the payment adjustment for each program is applied independently, the level of hospital Medicare payments put at risk can be substantial.¹⁰

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In contrast, a key lesson from the design of IPPS is that incentives to control costs first require the establishment of clinically credible national performance benchmarks for each type of patient for each measure of quality and delivery system effectiveness. Effective incentives to control the volume and variability of services associated with a hospital episode of care can thus be created by adjusting IPPS payments proportional to the financial impact of the variation between measures of quality and delivery system effectiveness and the national benchmarks.

Unfortunately, HACRP, HRRP and HVP do not adhere to this essential design requirement that made IPPS successful.

Selecting Measures of Quality and Delivery System Effectiveness

Selecting measures that identify unnecessary or preventable quality or delivery system failures is crucial to creating an equivalent hospital episode-of-care payment bundle. There should be a limited number of measures and each measure should have a substantial impact on hospital-related costs. There is a tendency in payment design to include too many performance measures, which should be resisted in order to focus hospital performance improvement efforts.

Unfortunately, the various standards organizations, such as the National Quality Form, have endorsed thousands of measures of quality of care or delivery system effectiveness that, in general, are too narrowly focused, with most measures having a relatively small financial impact. Many of these measures are based on specific care processes. Any imposition of specific care processes through a payment system will be seen as the Federal government attempting to dictate how medicine should be practiced. Instead, the focus should be on avoiding or resolving underlying quality problems or delivery system failures (e.g., a preventable readmission).

One approach to determining which performance measures should be included in a hospital episode-of-care bundle is to select measures that align with beneficiary expectations for the functioning of the hospital delivery system, including prevention of quality or delivery system failures such as:

- Unnecessary hospital admissions
- Avoidable complications or mortality
- Avoidable or unplanned readmissions or ED visits after hospital discharge
- Unnecessary admissions to a residential PAC facility

Failure to meet these basic beneficiary expectations is indicative of a delivery system that is not functioning as intended. Performance variations across hospitals in these measures of unnecessary or preventable quality or delivery system failures means that opportunities for improvement exist that can substantively lower cost and improve quality of care and delivery system effectiveness for beneficiaries. Although beneficiaries also have expectations relative to clinical outcomes such as slowing disease progression or improved function, such measures are highly disease specific, difficult to measure and will usually require extensive additional data collection.

Selecting measures that identify unnecessary or preventable quality or delivery system failures is crucial to creating an equivalent hospital episode-of-care payment bundle. There should be a limited number of measures and each measure should have a substantial impact on hospital-related costs.

Measures of avoidable inpatient complications,¹¹ readmissions,¹² and post-discharge ED visits¹³ are readily available and are used extensively in state Medicaid payment systems.¹⁴ Holding hospitals accountable for overall admissions is difficult because unnecessary hospital admissions are often related to care in the community that cannot be directly controlled by the hospital. However, indirect measures such as excess admissions through the ED for non-surgical low-severity patients¹⁵ and an underuse of outpatient surgery¹⁶ are two performance measures under the control of the hospital and directly impact a hospital's overall rate of admissions. Numerous measures of hospital mortality are available,¹⁷ including measures of surgical mortality.¹⁸ Excessive PAC facility admissions represent a delivery system failure with a significant impact on the cost of a hospital episode of care.¹⁹ The performance measures used in the analysis, summarized in Table 1, were risk adjusted using All Patient Refined Diagnosis Related Groups (APR DRGs).^{20, 21} The APR DRG risk classes are assigned at hospital admission and at discharge and have severity of illness subclasses and risk of mortality subclasses. Table 1 specifies how APR DRGs were used to risk adjust each performance measure.

The performance measures in Table 1 are examples of unnecessary or preventable quality or delivery system failures. Collectively referred to as Episode Performance Measures (EPMs) in this analysis, they represent a focused set of performance measures that expand hospital responsibility to encompass selection of the most appropriate care setting and patient care during the post-acute care period. By comparing performance on each EPM to a national risk-adjusted benchmark, and by adjusting IPPS DRG payments based on variation from the EPM national benchmark, incentives can be created that are equivalent to a hospital bundled episode of care.

Table 1: Description of Episode Performance Measures (EPMs)

EPM	Type	Methodology	Risk Adjustment
Inpatient Complications	Inpatient	One or more Potentially Preventable Complications during a hospital admission	Admission APR DRG with Severity-of-Illness Subclasses
30-Day Readmissions	Post-Acute	Potentially Preventable Readmissions within 30 days of hospital discharge	Discharge APR DRG with Severity-of-Illness Subclasses
Post-Discharge 30-Day ED Visits	Post-Acute	Potentially Preventable ED Visit within 30 days of hospital discharge	Discharge APR DRG with Severity-of-Illness Subclasses
ED Admissions for Non-Surgical Low-Severity Patients	Emergency Department	Short-stay, non-surgical low-severity hospital admissions from the ED	Admission APR DRG with Severity-of-Illness Subclasses
Underuse of Outpatient Surgery for Low-Severity Patients	Inpatient Outpatient	Low-complexity hospital admissions for procedures that could be performed in an outpatient site of service	Site neutral procedure categories
30-Day Post-Procedure Mortality for Low Risk of Mortality Patients	Inpatient Post-Acute	Death within 30 days of an inpatient procedure	Admission APR DRG with Risk-of-Mortality Subclasses
4-Day Post-Discharge PAC Facility Admissions	Post-Acute	Admission to a skilled nursing or rehabilitation facility within four days of hospital discharge	Discharge APR DRG with Severity-of-Illness Subclasses

Hospital Episode-of-Care Payment System

A hospital episode-of-care payment system should be designed to closely follow the IPPS structure, with a payment adjustment for each EPM based on performance differences from a national standard. In an IPPS-based hospital episode-of-care payment system—referred to as an Episodic Inpatient Prospective Payment System (E-IPPS)—the national EPM rate in each risk class (APR DRG) is calculated for each EPM. For an individual hospital, the expected value for an EPM is the product of the hospital volume in each risk class times the national EPM rate in the risk class, summed over all risk classes (a calculation that is similar to the determination of a DRG case mix index). Using national EPM rates would result in the sum of penalties and bonuses across all hospitals being equal (budget neutral). However, the Medicare payment adjustments in HACRP, HRRP and VBP impose mandated reductions in Medicare payments to hospitals. In order for E-IPPS to result in similar Medicare payment reductions, the national EPM rates can be used to identify the subset of best performing hospitals for each EPM. By using the EPM rates in these best practice hospitals to compute hospital expected values, the sum of penalties across hospitals would exceed the sum of bonuses, thereby reducing Medicare E-IPPS hospital payments.

The hospital payment adjustment for an EPM would be based on the difference between a hospital’s actual and expected EPM volume times an EPM-specific financial conversion factor (e.g., the average payment for a readmission), thereby making the payment adjustment for an EPM proportional to the actual financial harm or benefit associated with EPM performance. In this analysis, the financial conversion factor for complications was based on the marginal cost of a complication;²² for surgical mortality, the financial conversion factor was conservatively based on the payment for surgical admission; and for underuse of outpatient surgery, the financial conversion factor was based on the difference between inpatient and outpatient payment for 27 types of procedures.¹⁶ The financial impact of the individual EPMs can be summed, with EPM bonuses offsetting EPM penalties, to determine the net overall financial EPM impact for a hospital. In E-IPPS,

this net overall financial EPM impact can be expressed as a hospital episode payment adjustment factor to be applied to all IPPS payments for a hospital. Under E-IPPS, constraints on the level of EPM penalties and bonuses can be applied to achieve specific levels of payment reductions or to focus incentives on specific aspects of quality and delivery system performance.

Data

Medicare fee-for-service claims data from the Medicare Standard Analytic Files (Limited Data Set) for calendar year 2018 was used for the analysis. Only hospitals paid under IPPS were included.

To compare the financial impact of an EPM-based payment adjustment to the existing HACRP, HRRP and VBP payment adjustments, the analysis used the 2018 HACRP,²³ HRRP²⁴ and VBP²⁵ payment adjustments by hospital. These HACRP, HRRP and VBP payment adjustments are expressed as percent adjustments to a hospital's total IPPS payments, which were estimated using the DRG relative payment weights with no adjustment for outlier payments or other payment adjustments. The HACRP, HRRP and VBP payment adjustments were converted to dollars using the average per case IPPS payment for each hospital and summed to determine the net combined HACRP, HRRP and VBP hospital payment adjustment. The 2018 IPPS payment data with the HACRP, HRRP and VBP payment adjustments is referred to as IPPS+Q.

The socioeconomic status (SES) component of The Social Vulnerability Index (SVI) from the Centers for Disease Control and Prevention (CDC)²⁶ ranks U.S. counties based on the SES of the population residing in the county. The SES of each county is based on poverty, unemployment, income and education levels of the county's residents. The average SES rank of the residence county of admitted patients was computed for each hospital. Hospitals were then ranked based on the average SES rank of the counties where their patients resided. This hospital rank was used to evaluate the impact of SES on the distribution of penalties and bonuses under an E-IPPS payment adjustment and the current HACRP, HRRP and VBP payment adjustments.

Hospital Episode-of-Care Payment Simulation

For each of the seven EPMs, a national best practice norm was computed based on the best-performing hospitals that make up 50% of Medicare inpatient volume in IPPS hospitals. The payment penalty, expressed as a percent of IPPS payments to a hospital, is 1% for HACRP, up to 3% for HRRP, and roughly budget neutral for VBP. To configure a comparable E-IPPS payment system, an EPM penalty cap of 0.3% of total Medicare payments to a hospital was applied to each of the seven EPMs (with a maximum penalty of 2.1% for a hospital). This penalty cap also prevents any single EPM from dominating a hospital's episode payment adjustment. To strengthen the incentive for performance improvement, and because the best practice norm is a challenging standard to meet, the bonus cap for each EPM was set to 1% of total Medicare payments to a hospital.

Results

Across the seven EPMs, individual hospitals exceeded EPM best-practice performance by \$6.8 billion (uncapped penalty) and were below best practice by \$804 million (uncapped bonus) for a net difference of \$6.0 billion. After applying a 0.3% EPM penalty cap to hospitals that exceeded best practice and the 1.0% EPM bonus cap to hospitals that were below best practice, individual hospitals exceeded EPM best practice performance by \$1.5 billion and were below best practice by

\$581 million for a net payment impact of \$955 million. The net E-IPPS payment impact for each EPM is contained in Table 2.

Table 2: Net payment impact by EPM for E-IPPS with 0.3% measure penalty cap and 1% measure bonus cap

EPM	Percent Improvement for BP	Above Expected \$M	Below Expected \$M	E-IPPS with 0.3% Penalty Cap \$M	E-IPPS with 1% Bonus Cap \$M	Net E-IPPS Pay Decrease \$M
Inpatient Complications	24.5	964	117	254	105	149
30-Day Readmissions	11.7	782	104	247	96	151
Post-Discharge 30-Day ED Visits	17.1	55	7	55	7	48
ED Admissions for Non-Surgical Low-Severity Patients	38.1	1,334	140	277	81	196
Underuse of Outpatient Surgery for Low-Severity Patients	46.6	1,298	137	281	87	193
30-Day Post-Procedure Mortality for Low Risk-of-Mortality Patients	35.8	211	24	170	24	145
4-day Post-Discharge PAC Facility Admissions	23.0	2,192	276	253	181	72
Total		6,835	804	1,536	581	955

The percent improvement column in Table 2 is the average level of hospital performance improvement needed to achieve best practice across all hospitals. For example, Table 2 indicates a 24.5% improvement in complication performance is needed to achieve best practice. This should be readily achievable, as demonstrated by Maryland’s complication-based payment incentive reform initiative, in which the state’s hospitals were able to achieve a 56.6% reduction in inpatient complications over the program’s first five years.²⁷ The lower percent improvement of 11.7% for readmissions means there is less variability in readmission performance across hospitals and therefore less opportunity for savings. The EPM estimated net annual E-IPPS payment reductions are \$270 million for inpatient complications and \$675 million for readmissions. These reductions are similar to the 2018 CMS payment reductions reported from other sources (HACRP \$294 million²⁸ and HRRP \$528 million²⁹).

Table 3 compares the penalties and bonuses for IPPS+Q (HACRP and HRRP and VBP) and E-IPPS (with a 0.3% measure penalty cap and 1% measure bonus cap). Under IPPS+Q, the net hospital payment adjustment is a penalty of \$946 million, constituting 0.833% of total IPPS hospital payments. Under E-IPPS, the net hospital payment adjustment is a penalty of \$955 million, constituting 0.841% of total IPPS hospital payments. In IPPS+Q, 80.5% of hospitals had a penalty and in E-IPPS, 62.0% of hospitals had a penalty. Thus, under E-IPPS a much larger proportion of hospitals have a bonus. At the individual EPM level there are \$581 million in bonuses. However, at the hospital level most of the \$581 in EPM bonuses lower the net penalties to a hospital but do not result in the hospital having a net payment bonus. The \$165.1 million for hospitals with a bonus represent those hospitals for which EPM bonuses exceeded EPM penalties. This configuration, as shown in Table 3, is just one example of an E-IPPS payment design. The E-IPPS cap levels were selected to roughly replicate the IPPS+Q payment adjustments. The E-IPPS cap levels could be set to achieve any savings target up to the uncapped net penalty of \$6.0 billion shown in Table 2.

Table 3: Penalties and bonuses for IPPS+Q (HACRP and HRRP and VBP) and E-IPPS (with 0.3% measure penalty cap and 1% measure bonus cap)

	Hospitals	\$M Pay Adjust	Percent Total Pay
IPPS+Q			
Penalty	2,455	1,006.4	0.886
Bonus	384	60.4	0.053
Net		946.0	0.833
None	210		
E-IPPS			
Penalty	1,891	1,120.1	0.987
Bonus	1,158	165.1	0.145
Net		955.0	0.841

Hospitals were ranked based on the average SES rank of the counties where their patients resided from highest to lowest (the bottom 25th percentile contains the 25% of hospitals with the greatest population of patients from counties with low SES). Table 4 contains the results for hospitals in the top and bottom SES quartile for IPPS+Q and E-IPPS. Under IPPS+Q, net penalties for hospitals caring for lower SES patients (bottom quartile) were 1.07% of total IPPS hospital payments; for hospitals caring for higher SES patients (top quartile), net penalties were 0.709% of total IPPS hospital payments. Thus, under IPPS+Q the percent of total IPPS hospital payments in penalties was 51% higher for hospitals caring for lower SES patients than for hospitals caring for higher SES patients. For E-IPPS the reverse was true. Under E-IPPS, net penalties for hospitals caring for lower SES patients were 0.774% of total IPPS hospital payments, and 0.837% of total IPPS hospital payments for hospitals caring for higher SES patients. Thus, under E-IPPS the percent of total IPPS hospital payments in penalties was 7.7% lower for hospitals caring for lower SES patients than for hospitals caring for higher SES patients.

Table 4: Net penalties for hospitals with the highest proportion of admissions from low SES counties and hospitals with the lowest proportion of admissions from low SES counties for IPPS+Q (HACRP, HRRP and VBP) and E-IPPS (with 0.3% measure penalty cap and 1% measure bonus cap)

	Low SES 0-25%			High SES 75-100%		
	Hospitals	\$M Pay Adjust	%Total Pay	Hospitals	\$M Pay Adjust	%Total Pay
IPPS+Q						
Penalty	649	202.9	1.097	608	257.2	0.838
Bonus	71	4.9	0.026	96	17.9	0.058
Net		198.0	1.070		239.2	0.780
No Adjustment	42			59		
E-IPPS						
Penalty	388	178.0	0.968	496	299.2	0.976
Bonus	374	35.7	0.194	267	42.7	0.139
Net		142.3	0.774		256.5	0.837

In Table 5, hospitals are characterized by teaching status (IPPS Indirect Medical Education [IME]), IPPS Disproportionate Share Hospital (DSH) designation, location and size. In Table 5, location is based on the location of the hospital as opposed to Table 4 where location is based on the residence

of the beneficiary. Under IPPS+Q, the percent of total IPPS hospital payments in penalties was higher for the top 10% of teaching hospitals. For E-IPPS, the reverse was true with the percent of total IPPS hospital payments in penalties lower for the top 10% of teaching hospitals.

Table 5: Net penalties across types of hospitals for IPPS+Q (HACRP and HRRP and VBP) and E-IPPS (with 0.3% measure penalty cap and 1% measure bonus cap)

Hospital Type	Hospitals	IPPS+Q		E-IPPS	
		\$M Pay Adjust	%Total Pay	\$M Pay Adjust	%Total Pay
IME Top 10%	327	222.9	0.893	202.8	0.812
IME All Other	2722	723.1	0.816	752.2	0.849
DSH Top 20%	613	169.2	0.841	145.1	0.720
DSH Middle 60%	1874	626.6	0.801	701.5	0.898
DSH Bottom 20%	562	150.2	0.985	108.4	0.709
Large Urban	1197	438.9	0.874	466.9	0.931
Other Urban	851	248.0	0.737	275.2	0.819
Rural	1001	259.1	0.872	212.9	0.716
Size Top 10%	329	303.2	0.741	404.9	0.991
Size All Other	2720	642.8	0.885	550.1	0.757
All Hospitals	3049	946.0	0.833	955.0	0.841

Under IPPS+Q, the percent of total IPPS hospital payments in penalties was lower for the top 10% of hospitals by size. For E-IPPS, the reverse was true with the percent of total IPPS hospital payments in penalties higher for the top 10% of hospitals by size. Although some studies have found that very large hospitals appear to experience a diseconomy of scale in terms of their production efficiency,^{30, 31} it is not clear whether there is a diseconomy of scale that impacts quality and delivery system effectiveness. Across locations for both IPPS+Q and E-IPPS, large urban hospitals have the highest percent of total IPPS hospital payments in penalties. The biggest difference by location is that for E-IPPS the percent of total IPPS hospital payments in penalties for rural hospitals is lower than in other locations.

For Disproportionate Share hospitals under IPPS+Q, the percent of total IPPS hospital payments in penalties was the lowest for the middle 60% of hospitals. For E-IPPS the reverse was true. Under E-IPPS, the percent of total IPPS hospital payments in penalties was the highest for the middle 60% of hospitals. The biggest difference for Disproportionate Share hospitals is that under E-IPPS, the top DSH hospitals have a low percent of total IPPS hospital payments in penalties and for the bottom DSH hospitals, IPPS+Q has a high percent of total IPPS hospital payments in penalties. Disproportionate share reflects the caseload of Medicaid patients in a hospital and is not necessarily indicative of the Medicare population in the hospital.

Table 5 shows a general pattern that under E-IPPS, teaching hospitals, high DSH hospitals and rural hospitals have a lower percent of total IPPS hospital payments in penalties and large-size hospitals and large urban hospitals have a higher percent of total IPPS hospital payments in penalties than under IPPS+Q.

Discussion

An EPM-based payment adjustment provides policymakers with numerous options for focusing incentives. To achieve specific savings levels, policymakers can establish a variety of parameters, such as the number of individual EPMs included in the payment adjustment, the subset of hospitals included in the best-practice EPM norms, caps on the magnitude of the bonus or penalty for an individual EPM, and a cap on the net overall EPM bonus or penalty to a hospital. In addition, the cap on the magnitude of the bonus or penalty could be set to a different value for some EPMs, for some types of hospitals or for specific patient populations. The EPM performance measures in the E-IPPS simulation are examples of the type of unnecessary or preventable quality or delivery system failures that can be used in a hospital bundled episode-of-care payment system.

Summary and Conclusions

The underlying payment system designs of E-IPPS and IPPS+Q are quite different. E-IPPS replicates the core IPPS design principle, which set clinically credible performance standards (the DRG price) by type of patient (the DRG) with variation from the DRG price resulting in a profit or loss that is directly proportional to a hospital's performance relative to the DRG price. This easily understood "product with a price" design resulted in real and sustainable behavior changes in hospital management. Consistent with this core IPPS design principle, E-IPPS sets a clinically credible performance standard for each EPM by type of patient and adjusts payment levels in direct proportional to hospital performance relative to the EPM best practice performance standard. The HACRP, HRRP and VBP payment adjustments in IPPS+Q do not adhere to this core IPPS design principle.

The EPMs expand hospital responsibility to include the selection of the most appropriate patient care and care setting during the post-discharge period. E-IPPS transforms IPPS into a hospital bundled episode-of-care payment system that can be a viable alternative to the existing HACRP, HRRP and VBP payment adjustments in IPPS.

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