Annals of Internal Medicine ORIGINAL RESEARCH

The Financial Effect of Value-Based Purchasing and the Hospital Readmissions Reduction Program on Safety-Net Hospitals in 2014

A Cohort Study

Matlin Gilman, BA; Jason M. Hockenberry, PhD; E. Kathleen Adams, PhD; Arnold S. Milstein, MD; Ira B. Wilson, MD, MSc; and Edmund R. Becker, PhD

Background: Medicare's value-based purchasing (VBP) and the Hospital Readmissions Reduction Program (HRRP) could disproportionately affect safety-net hospitals.

Objective: To determine whether safety-net hospitals incur larger financial penalties than other hospitals under VBP and HRRP.

Design: Cross-sectional analysis.

Setting: United States in 2014.

Participants: 3022 acute care hospitals participating in VBP and the HRRP.

Measurements: Safety-net hospitals were defined as being in the top quartile of the Medicare disproportionate share hospital (DSH) patient percentage and Medicare uncompensated care (UCC) payments per bed. The differences in penalties in both total dollars and dollars per bed between safety-net hospitals and other hospitals were estimated with the use of bivariate and graphical regression methods.

Results: Safety-net hospitals in the top quartile of each measure were more likely to be penalized under VBP than other hospitals (62.9% vs. 51.0% under the DSH definition and 60.3% vs. 51.5% under the UCC per-bed definition). This was also the case under the HRRP (80.8% vs. 69.0% and 81.9% vs. 68.7%, respectively). Safety-net hospitals also had larger payment penalties ($115 900 vs. $66 600 and $150 100 vs. $54 900, respectively). On a per-bed basis, this translated to $436 versus $332 and $491 versus $314, respectively. Sensitivity analysis setting the cutoff at the top decile rather than the top quartile decile led to similar conclusions with somewhat larger differences between safety-net and other hospitals. The quadratic fit of the data indicated that the larger effect of these penalties is in the middle of the distribution of the DSH and UCC measures.

Limitation: Only 2 measures of safety-net status were included in the analyses.

Conclusion: Safety-net hospitals were disproportionately likely to be affected under VBP and the HRRP, but most incurred relatively small payment penalties in 2014.

Primary Funding Source: Patient-Centered Outcomes Research Institute.

Ann Intern Med. *doi:10.7326/M14-2813* **www.annals.org**

For author affiliations, see end of text.

This article was published online first at www.annals.org on 8 September 2015.

Under the Patient Protection and Affordable Care Act (ACA), 2 pay-for-performance programs were created with the goal of improving hospital care by increasing or decreasing Medicare inpatient payments, depending on the quality of care (1–3). Medicare's value-based purchasing (VBP) program rewards hospitals that perform well on certain quality metrics and penalizes those that do not (2). The Hospital Readmissions Reduction Program (HRRP) penalizes hospitals with high 30-day readmission rates (3). Both programs began on 1 October 2012 (the beginning of federal fiscal year [FY] 2013). For FY 2013, VBP resulted in bonuses for 1557 hospitals and penalties for 1427 hospitals; the HRRP resulted in penalties for 2217 hospitals (4, 5). The bonuses and penalties under VBP involved a redistribution of nearly $1 billion among hospitals, HRRP penalties totaled more than $280 million, and total inpatient hospital spending by Medicare was $140 billion (4–6).

Under VBP, hospitals can gain or lose as much as 1.25% in Medicare payments in 2014, and this will increase to 2.0% by 2017 (2). Under the HRRP, hospitals can lose as much as 2.0% in Medicare payment in 2014 (3). Hospitals participating in the HRRP are receiving payment adjustments based on their excess 30-day readmission ratios for acute myocardial infarction (AMI), heart failure (HF), and pneumonia (3). In 2015, the maximum payment reduction a hospital can receive under the HRRP will increase to 3.0% of payment (3).

Safety-net hospitals may be disproportionately affected by these programs because they often perform worse on the quality metrics that have the greatest weight in the VBP program (process-of-care and patient experience scores), and they often have higher readmission rates (7–14). Other studies have found that safety-net hospitals are at risk for faring poorly under both VBP and the HRRP (7, 8, 12, 15). However, to our knowledge, no study has attempted to estimate the magnitude of the overall, combined financial effect of these programs on safety-net hospitals. We examined whether these programs—both individually and combined—had a disproportionate financial effect on safety-net hospitals in FY 2014 (1 October 2013 to 30 September 2014), both in terms of the probability of incurring a penalty and the magnitude of the penalty.

See also:

Editorial comment 473

EDITORS' NOTES

Context

Two new Medicare programs, value-based purchasing (VBP) and the Hospital Readmissions Reduction Program (HRRP), financially penalize hospitals that do not meet specific quality improvement targets.

Contribution

Using 2 definitions of "safety-net hospitals," the authors estimated that these institutions would incur more financial penalties under these programs than other hospitals.

Caution

The study did not examine whether VBP and the HRRP result in better care.

Implication

The financial position of safety-net hospitals—critical institutions for the care of the underserved—may be negatively affected by new Medicare quality improvement programs.

METHODS

Data

The following data were assembled: data from the Centers for Medicare & Medicaid Services (CMS) containing the VBP payment adjustment and the process-of-care, patient experience, and mortality scores of each hospital participating in VBP in 2014; data from the CMS containing the HRRP payment adjustment and the excess readmissions ratios for AMI, HF, and pneumonia for each hospital participating in the HRRP in 2014; data from the Medicare Impact File for 2014; financial data from the CMS containing the total base Medicare operating inpatient payment in 2011 for each hospital; financial data from the CMS containing the projected Medicare uncompensated care (UCC) payment for each hospital in 2014; and American Hospital Association survey data for 2011.

Sample

In 2014, there were 2728 hospitals in VBP and 3074 hospitals subject to the HRRP. Combined, 3076 hospitals were subject to at least one of the programs. Of these 3076 hospitals, 54 were excluded because we lacked information to link them across the 6 data sets. These were generally small hospitals covered by the

Table 1. Characteristics of 3022 Hospitals for FY 2014, by Varying Definitions of SNH According to DSH Patient Percentage and Medicare UCC Payments*

Characteristic	SNH Defined as Top Quartile of DSH Patient Percentage					
	SNH (n = 755)			Non-SNH (n = 2267)		
	Number	Percentage for Column	Percentage for Row	Number	Percentage for Column	Percentage for Row
Bed size						
Small†	174	23.0	19.5	718	31.7	80.5
Medium‡	318	42.1	23.3	1047	46.2	76.7
Large§	263	34.8	34.4	502	22.1	65.6
Ownership						
Nonprofit	382	50.6	20.0	1532	67.6	80.0
For-profit	192	25.4	31.2	424	18.7	68.8
Government	181	24.0	36.8	311	13.7	63.2
Teaching	328	43.4	34.0	636	28.1	66.0
Region						
Northeast	99	13.1	20.3	388	17.1	79.7
South	180	23.8	18.2	810	35.7	81.8
Midwest	266	35.2	27.2	713	31.5	72.8
West	210	27.8	37.1	356	15.7	62.9
Urban	553	73.2	25.7	1598	70.5	74.3
Measures of payer mix	**Mean**			**Mean**		
Share of Medicare patient days, %	43.0			53.8		
Share of Medicaid patient days, %	28.4			16.4		
Medicare UCC payment, $	6 276 000			1 973 000		
UCC payment per bed, $	21 551			8494		

DSH = disproportionate share hospital; FY = fiscal year; SNH = safety-net hospital; UCC = uncompensated care.
* Percentages may not sum to 100 due to rounding.
† <100 beds.
‡ 100–299 beds.
§ ≥300 beds.

HRRP but not the VBP program that had not incurred a penalty under the HRRP. Our analytic sample included the remaining 3022 hospitals.

Safety-Net Hospital

We defined "safety-net hospital" using the Medicare disproportionate share hospital (DSH) patient percentage and the Medicare UCC payment per bed. We considered safety-net hospitals to be those in the top quartile of these measures, although we also performed sensitivity analyses using the top decile as the cutoff. The top quartile of DSH patient percentage has been used in recent studies as a measure of safety-net status (7, 8, 16). Appendix Table 1 (available at www.annals.org) presents the concordance among the quartile rankings of the DSH and UCC measures of safety-net status.

The DSH patient percentage is calculated as follows: [(count of supplementary Social Security income recipient patient-days ÷ total Medicare patient-days) + (total Medicaid days ÷ total inpatient days)].

Until the passage of the ACA, the DSH program was the primary vehicle through which the CMS reimbursed hospitals serving larger proportions of socioeconomically disadvantaged patients. Although this is called a "percentage" in the statute and literature, it can exceed 1 if a hospital has a very large share of Medicare supplementary Social Security income (SSI) patients coupled with a large portion of non-SSI Medicaid patients.

Under the ACA, DSH payments are being reduced in favor of UCC payments as a way of reimbursing hospitals for treating socioeconomically disadvantaged patients. Under the UCC approach, hospitals will still receive 25% of the DSH payment, but the remaining 75% of the funds that would have been available under the DSH program will be adjusted for the reduction in uninsured patients across the nation and distributed among hospitals on the basis of each UCC day as a percentage of all UCC days nationwide. For FY 2014, the CMS decided that the latter would still be based on the sum of Medicare SSI and Medicaid patient-days.

We recognize that definitions of safety-net hospitals vary. We chose the 2 measures noted because they better capture the hospitals that received payments for treating Medicare patients, who drive the VBP and HRRP adjustments, and because they make up a larger portion of the revenue. As such, disproportionate pen-

Table 1–Continued

SNH Defined as Top Quartile of UCC per Bed					
SNH (n = 755)			Non-SNH (n = 2267)		
Number	Percentage for Column	Percentage for Row	Number	Percentage for Column	Percentage for Row
76	10.1	8.5	816	36.0	91.5
298	39.5	21.8	1067	47.1	78.2
381	50.5	49.8	384	16.9	50.2
456	60.4	23.8	1458	64.3	76.2
152	20.1	24.7	464	20.5	75.3
147	19.5	29.9	345	15.2	70.1
431	57.1	44.7	533	23.5	55.3
141	18.7	29.0	346	15.3	71.0
217	28.7	21.9	773	34.1	78.1
194	25.7	19.8	785	34.6	80.2
203	26.9	35.9	363	16.0	64.1
650	86.1	30.2	1501	66.2	69.8
Mean			Mean		
43.4			53.7		
26.9			17.0		
7 846 000			1 450 000		
23 957			7693		

alties under these programs are most salient to those hospitals (8). Further, hospitals serve more Medicaid patients than uninsured patients, and as such, Medicaid patient revenue represents a much larger share of the hospitals' revenue than UCC (8). We used the UCC payment as an alternative measure because the new Medicare program more closely targets the payments to the hospitals delivering more UCC and will be the predominant way that the CMS compensates hospitals for these costs going forward. We used UCC per bed because we did not want to confound hospital size with safety-net status—larger hospitals could have larger UCC payments by virtue of size rather than UCC burden. However, as noted, the CMS is not currently using direct measures of UCC, perhaps because of the difficulty in capturing such information in a way that validly reflects this burden across hospitals.

Data Synthesis and Analysis

VBP

Using data from the CMS containing the VBP payment adjustment and the performance scores for each hospital in 2014, we compared the proportion of safety-net and non–safety-net hospitals that were subject to either a Medicare inpatient payment rate reduction or a payment rate increase of varying amounts under VBP. We also compared the average process, patient experience, and survival scores for safety-net and non–safety-net hospitals to determine the effect of each measure on VBP payment adjustments. The CMS uses a weighted average of these scores to adjust the total diagnosis-related group (DRG)–based payment that a hospital receives in a given FY. For 2014, this adjustment was capped at a 1.25% gain or loss, meaning that well-performing hospitals would have received up to a 1.25% bonus and those that performed poorly would have received up to a 1.25% penalty on their Medicare DRG-based revenue. For technical details on the VBP measures, see the Appendix (available at www.annals.org).

The HRRP

Using data from the CMS containing the HRRP payment adjustment and the excess readmission ratio for AMI, HF, and pneumonia for each hospital in 2014, we compared the proportion of safety-net and non–safety-net hospitals subject to Medicare inpatient payment rate reductions of varying amounts under the HRRP. We also compared the average excess readmissions ratios for AMI, HF, and pneumonia for safety-net and non–safety-net hospitals to determine the effect of each excess readmission ratio on a hospital's inpatient payment rate reductions under the HRRP. Excess readmission is defined as the ratio between a hospital's observed and expected 30-day, risk-adjusted, condition-specific readmission rate. The expected rate is based on clinical risk adjustment and is benchmarked for historical hospital performance for 30-day condition-specific readmission. Similar to VBP, the CMS then uses a weighted average of the excess 30-day readmission rate for each condition to calculate a composite adjustment. In contrast to VBP, hospitals with positive performance, in which the observed rates are lower than expected, cannot receive a bonus. Hospitals in which the observed rates exceed the expected rates are penalized with either the composite adjustment or 2% of their total Medicare DRG-based revenue, whichever is less. For technical details on the HRRP measures, see the Appendix.

Financial Effect of VBP and the HRRP

Using data from the CMS containing the total base Medicare operating inpatient payment to each hospital in 2011 (the most recent year of these financial data that we could obtain), we estimated the effect of VBP and the HRRP on hospitals in terms of revenues forfeited or gained in 2014, under the assumption that the base Medicare payments would be relatively similar in 2014.

To capture the combined effect of the programs, we summed the change in total payment adjustment due to both VBP and the HRRP for each hospital. Because absolute payments may obscure relative effects based simply on hospital size, we also divided the total combined payment adjustment by the number of hospital beds. We tested for significant differences in the resulting average VBP payment adjustment, HRRP penalty, and the overall change in payment rate (both total and per bed) for safety-net and non–safety-net hospitals using our 2 definitions.

Because tests of means can obscure important effects along the distribution of our measure and are sensitive to outliers, we also compared each of the financial outcome measures along the distribution of DSH and UCC using graphical and regression-based methods. Specifically, we plotted each hospital's value on a graph and then overlaid the graph with a quadratic regression fit of the relationship between the measure used to define safety-net status (either DSH patient percentage or UCC per bed) and the requisite financial outcome.

Role of Funding Source

This study was funded by the Patient-Centered Outcomes Research Institute. The funding source had no role in the study.

RESULTS

Hospital Characteristics

Safety-net hospitals were more likely than other hospitals to have 300 or more beds based on the per-bed definition of both the DSH (35% vs. 22%) and UCC (51% vs. 17%). Under the DSH definition of safety-net hospital, the distribution of hospitals was more skewed toward for-profit (25% vs. 19%) and public ownership status (24% vs. 14%). The for-profit proportions were almost identical under the UCC definition, and the difference in the proportion of public hospitals was smaller (20% vs. 15%). Under both definitions, safety-net hospitals were more likely to be teaching hospitals (43% vs. 28% under the DSH definition and 57% vs.

Table 2. Effects of VBP and the HRRP on SNHs and Non-SNHs for FY 2014, by Varying Definitions of SNH According to DSH Patient Percentage and Medicare UCC Payments

Variable	SNH Defined as Top Quartile of DSH Patient Percentage			SNH Defined as Top Quartile of UCC per Bed		
	SNH	Non-SNH	*P* Value	SNH	Non-SNH	*P* Value
VBP program effects						
Hospitals, *n*	657	2039	–	711	1985	–
VBP total performance score	43.8	47.4	<0.001	44.8	47.2	<0.001
VBP process score	55.9	59.9	<0.001	57.6	59.5	0.023
VBP patient experience score	35.2	42.1	<0.001	33.4	42.9	<0.001
VBP mortality (survival) score	32.4	31.3	0.23	35.4	30.1	<0.001
Hospitals penalized, %	62.9	51.0	<0.001	60.3	51.5	<0.001
Hospitals gaining, %	37.1	49.0	<0.001	39.7	48.5	<0.001
VBP adjustment, $	−18 400	5491	<0.001	−12 348	3974	0.003
VBP adjustment per bed, $	−84	16	<0.001	−69	13	<0.001
HRRP effects						
Hospitals, *n*	755	2267	–	755	2267	–
Penalized under the HRRP, %	80.8	69.0	<0.001	81.9	68.7	<0.001
Excess readmission ratio*						
AMI	1.023	0.994	<0.001	1.019	0.993	<0.001
HF	1.029	0.992	<0.001	1.022	0.994	<0.001
Pneumonia	1.016	0.996	<0.001	1.017	0.995	<0.001
HRRP penalty, $	−99 800	−71 600	<0.001	−139 300	−58 400	<0.001
HRRP penalty per bed, $	−363	−346	<0.001	−427	−325	<0.001
Total of VBP and HRRP						
Hospitals, *n*	755	2267	–	755	2267	–
Total combined payment adjustment, $	−115 900	−66 600	<0.001	−150 100	−54 900	<0.001
Total combined payment adjustment per bed, $	−436	−332	<0.001	−491	−314	<0.001

AMI = acute myocardial infarction; DSH = disproportionate share hospital; FY = fiscal year; HF = heart failure; HRRP = Hospital Readmissions Reduction Program; SNH = safety-net hospital; UCC = uncompensated care; VBP = value-based purchasing.
* >1 in cases in which the risk-adjusted 30-d readmission rate was higher than expected and <1 in which the risk-adjusted 30-d readmission rate was lower than expected for the condition specified. Stated another way, hospitals with an excess readmission ratio >1 performed worse than expected on 30-d risk-adjusted readmission and those with an excess readmission ratio <1 performed better than expected on 30-d risk-adjusted readmission. The **Appendix** (available at www.annals.org) includes details on the HRRP and the algorithm used to translate these ratios into the penalties.

23.5% under the UCC definition) and urban, although the difference was smaller under the DSH definition (73% vs. 71%) than the UCC definition (86% vs. 66%) (Table 1).

VBP

When we compared VBP performance scores for safety-net and non–safety-net hospitals, the former had worse average process and patient experience scores, which together accounted for 75% of a hospital's VBP payment adjustment in 2014 (Table 2). The average process score among safety-net hospitals was 56, compared with 60 among all other sample hospitals. The average patient experience score among safety-net hospitals was 35, compared with 42 among other hospitals. Safety-net hospitals did not have a worse average survival score (32 vs. 31).

Safety-net hospitals were more likely to receive a reduced payment rate due to VBP (63% vs. 51%; $P < 0.001$) (Table 2).

When we examined the proportion of hospitals that were gaining under VBP, we found that safety-net hospitals were also less likely to receive VBP bonus payments (37% vs. 49% by the DSH definition and 40% vs. 49% by the UCC definition) (Table 2). They were also more likely to be penalized under either definition (63% vs. 51% and 60% vs. 52%, respectively). In terms of VBP, the mean adjustment resulted in a penalty among safety-net hospitals under both definitions ($18 400 and $12 348) but a bonus among other hospitals ($5491 and $3974).

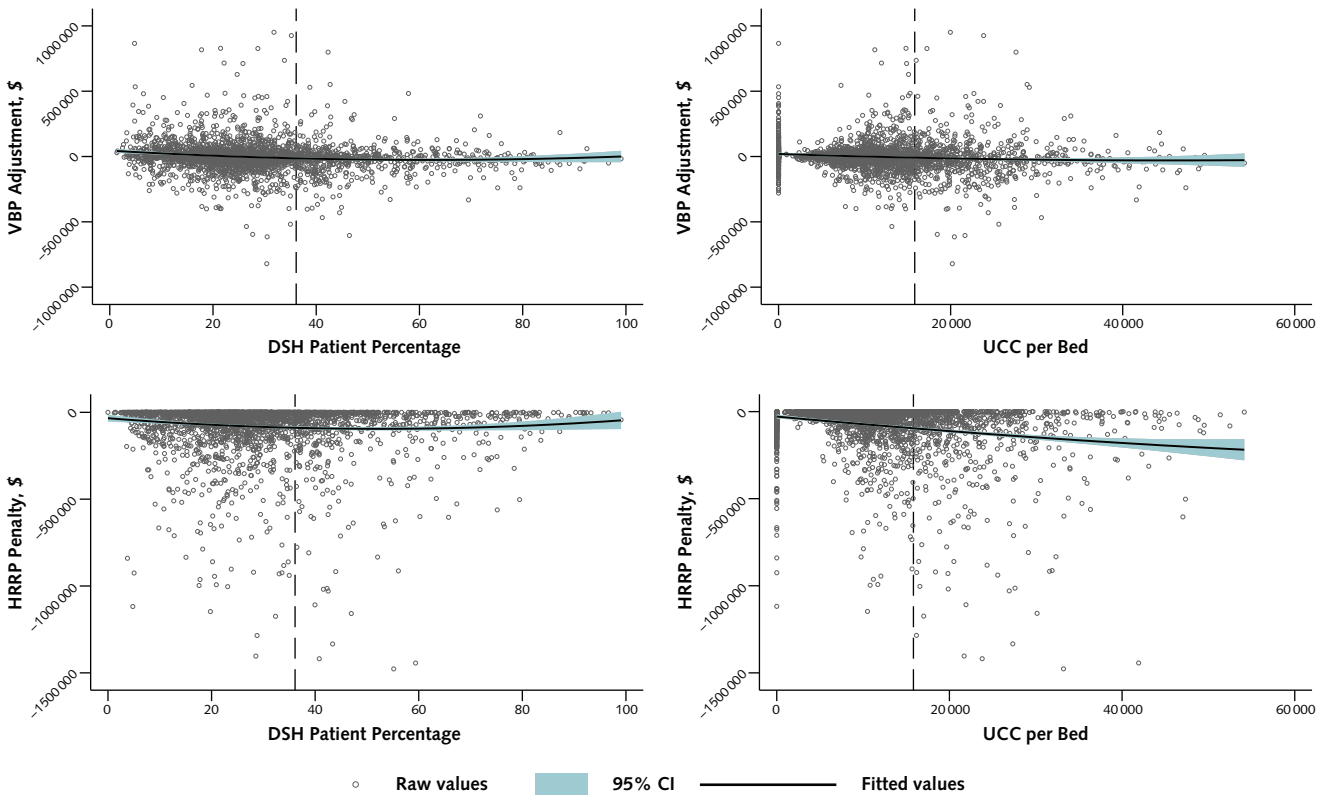
The HRRP

When we compared HRRP excess readmission ratios for AMI, HF, and pneumonia for safety-net and non–safety-net hospitals, safety-net hospitals had higher readmission ratios for each condition (Table 2). As a result, safety-net hospitals were at greater risk for receiving a reduced payment rate under the HRRP by either definition of safety-net status (81% vs. 69% under the DSH definition and 82% vs. 69% under the UCC definition) (Table 2). In terms of payment penalty magnitude, safety-net hospitals had larger penalties under the DSH definition ($99 800 vs. $71 600), a difference that was more pronounced under the UCC definition ($139 300 vs. $58 400).

Overall Effect of VBP and the HRRP

When we examined the combined overall effect of VBP and the HRRP on safety-net versus non–safety-net hospitals, the former incurred a larger total penalty under the DSH definition ($115 900 vs. $66 600), and the penalty was again more pronounced under the UCC definition ($150 100 vs. $54 900). On a per-bed basis, this was a difference of $436 versus $332 under the DSH and $491 versus $314 under the UCC definitions.

Figure 1. VBP adjustments and HRRP penalties according to DSH percentage and UCC per bed, by dollars.



Outliers, which are shown in **Appendix Table 3** (available at www.annals.org), had a VBP adjustment greater than $1 million, an HRRP penalty of $2 million or more, or both. These outliers were removed only for display purposes and were included in the regression fit of the data. The vertical dashed line in each graph represents the cutoff for the upper quartile on each measure used to define safety-net hospitals in **Table 2**. DSH = disproportionate share hospital; HRRP = Hospital Readmissions Reduction Program; UCC = uncompensated care; VBP = value-based purchasing.

Figure 1 shows the graphical comparisons of the VBP payment adjustment and HRRP payment penalties according to both DSH patient percentage and UCC per bed. Of note, the VBP adjustments that were concentrated in the hospitals with a lower percentage of DSH patients varied widely, but adjustments were more widely distributed under the UCC-based measure of safety-net hospitals. A consistent trend toward a larger penalty along the entire distribution of the measure used to define safety-net hospitals was found only in the relationship between the UCC definition and the HRRP penalty.

These graphical relationships are displayed in **Figure 2** on a dollars-per-bed basis. In contrast to **Figure 1**, the wider variation is concentrated in the non–safety-net hospitals, and there was no consistent trend toward increasing HRRP penalties along the distribution of UCC per bed.

Figure 3 shows the comparisons of the total VBP and HRRP adjustments to the distributions of DSH patient percentage and UCC per bed. The differences in variation persist across the distribution when looking at total dollars and dollars per bed as the outcomes. The only relationship that exhibits a trend toward increasing penalties across the measure of safety-net status is that of the combined total payment along the distribution of UCC per bed. This is consistent with **Figure 1** and that HRRP penalties are much larger for many hospitals than the negative VBP adjustments.

DISCUSSION

Our study of the effect of VBP and the HRRP on safety-net hospitals has 3 main findings. First, safety-net hospitals are, on average, at greater risk for incurring a financial penalty under VBP and the HRRP. Second, when examined along the distribution of measures used to define safety-net status, the combined effect of the programs in terms of Medicare inpatient revenue forfeited in 2014 is likely to be small for most hospitals, with the outliers concentrated among hospitals with lower DSH patient percentage or UCC per bed. Third, a somewhat incidental finding is that the magnitude of the penalty per bed under VBP and the HRRP is small compared with the Medicare UCC per-bed payment hospitals receive.

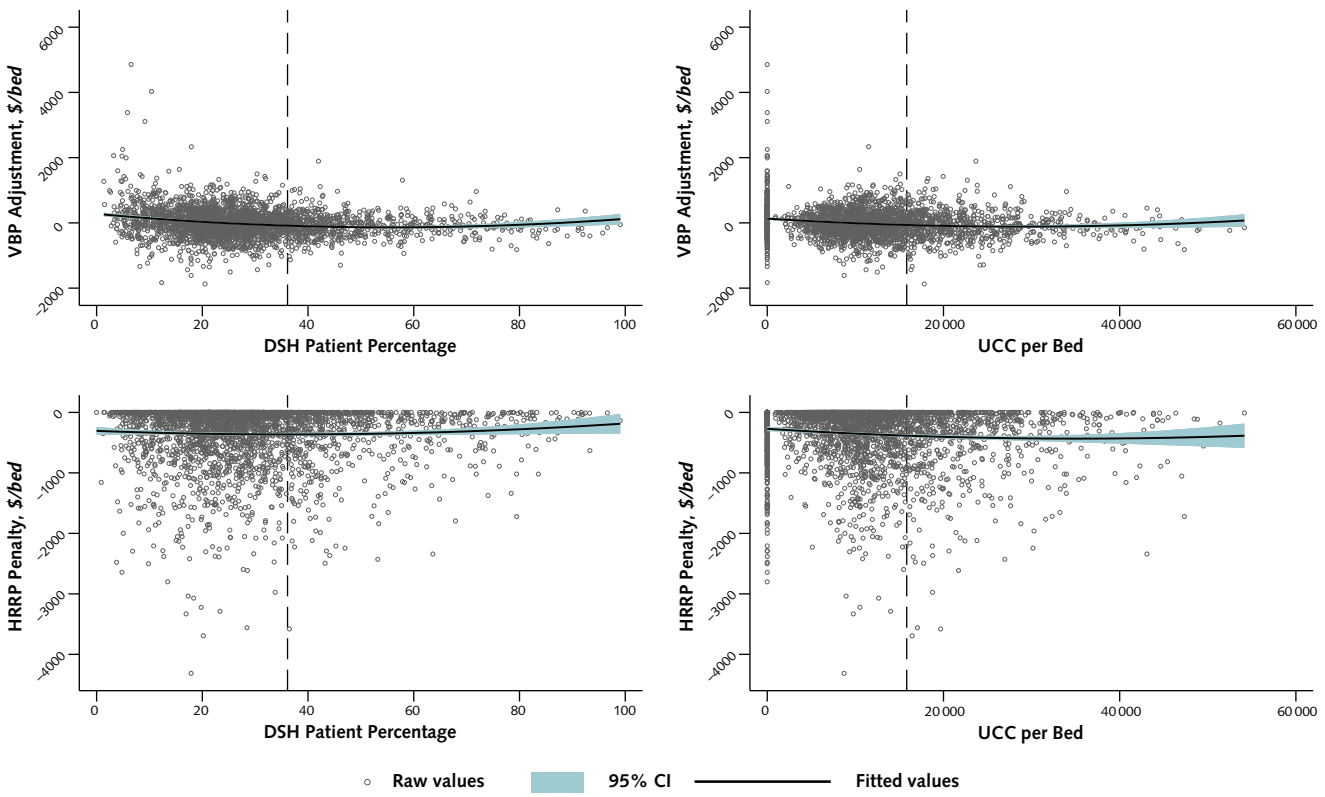
Although the payment penalties that safety-net hospitals are receiving under VBP and the HRRP were usually small, supplemental analysis (**Appendix Table 2**, available at www.annals.org) reveals that approximately 1 in every 10 safety-net hospitals in the top quartile of DSH definition are receiving payment rate reductions

totaling 1.0% or greater in 2014. Because safety-net hospitals are known to have had historically low margins even before the 2008 economic recession (14), losing 1.0% or more of Medicare inpatient payments could have a significant effect on these hospitals' financial conditions for 2 reasons. First, if they were to receive persistent annual reductions in payment rate despite quality improvement efforts, the accumulation of these small penalties on overall financial position would further disadvantage these hospitals. Second, the transition from DSH to the Medicare UCC payments mandated under the ACA will mean less revenue as the proportion of uninsured patients decreases and mandated reduction in the total pool of funds increases. As such, it is not clear that these reductions will be fully offset from revenue by newly insured patients covered by the ACA's insurance expansion, given earlier evidence from insurance expansions in Massachusetts (16). When safety-net hospitals close, patients in these communities are negatively affected, and close monitoring of the financial condition of these institutions is warranted as the stakes in VBP and the HRRP increase.

Health policy experts debate the direction that VBP and the HRRP should take going forward. Discussion of the HRRP, which currently leads to larger penalties than VBP, centers on whether the CMS should adjust readmission rates according to socioeconomic status (SES) (17–23). This consideration is important to safety-net hospitals because they treat a disproportionate share of patients with low SES. The HRRP payment adjustment algorithm adjusts for severity of illness but not SES, despite strong evidence that SES affects the likelihood of hospital readmission (24). The CMS does not adjust for SES to prevent hospitals that provide substandard care to low-income patients from eluding penalty (25–27). However, the Medicare Payment Advisory Commission and other health policy experts have argued that the HRRP, by not adjusting readmission according to SES, unfairly penalizes hospitals for serving the poor. The Medicare Payment Advisory Commission has argued that the HRRP should be redesigned to penalize safety-net hospitals that perform worse than hospital peer groups with similarly large low-income caseloads—not the ones that perform worse than all other hospitals in the nationwide HRRP. The CMS has committed to continue monitoring this situation, which is important because our examination indicates that as one moves along the distribution toward higher UCC per bed, hospitals incur larger total penalties.

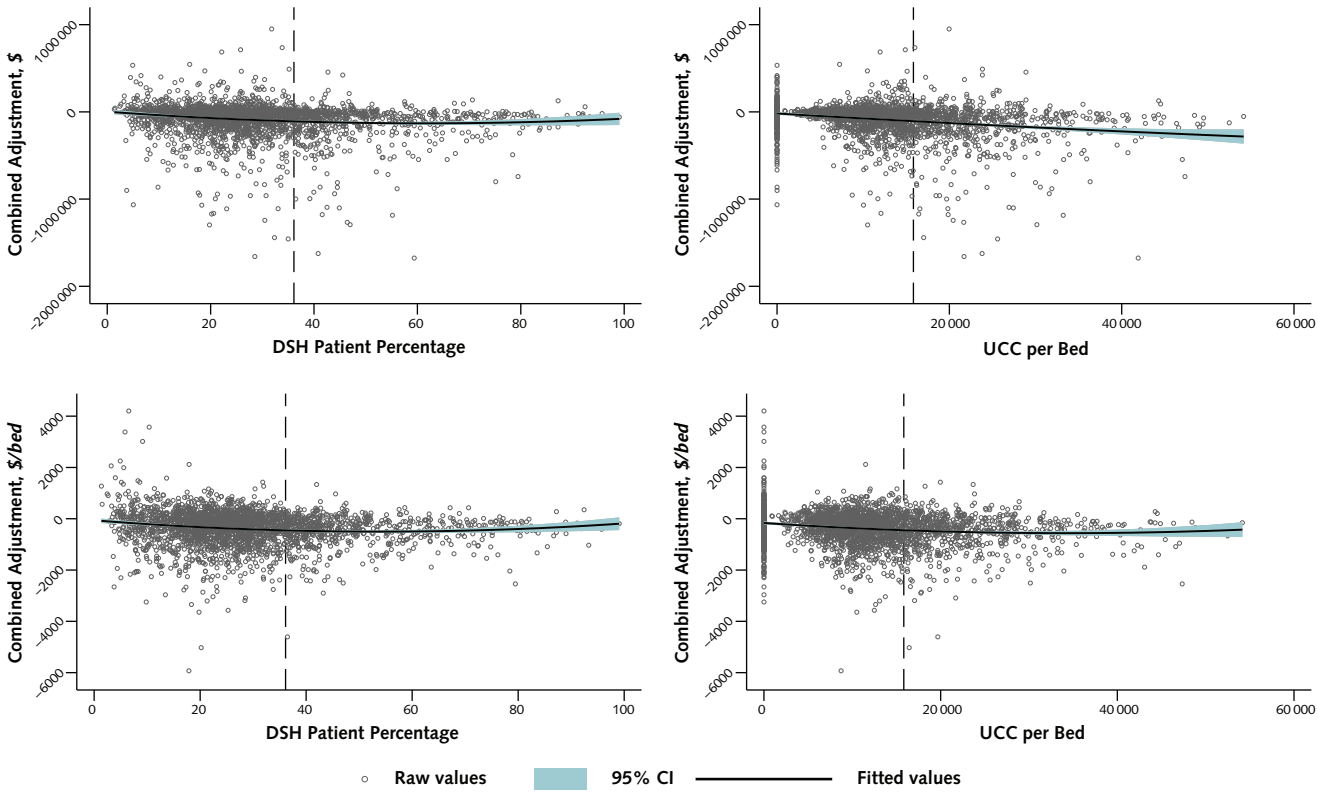
The VBP debate centers on which metrics best represent "value" in hospital care (28). Some believe strongly that process scores are most important and

Figure 2. VBP adjustments and HRRP penalties according to DSH percentage and UCC per bed, by dollars per bed.



Outliers, which are shown in Appendix Table 3 (available at www.annals.org), had a VBP adjustment greater than $1 million, an HRRP penalty of $2 million or more, or both. These outliers were removed only for display purposes and were included in the regression fit of the data. The vertical dashed line in each graph represents the cutoff for the upper quartile on each measure used to define safety-net hospitals in Table 2. DSH = disproportionate share hospital; HRRP = Hospital Readmissions Reduction Program; UCC = uncompensated care; VBP = value-based purchasing.

Figure 3. Combined VBP adjustments and HRRP penalties by DSH percentage and UCC per bed.



Outliers, which are shown in **Appendix Table 3** (available at www.annals.org), had a VBP adjustment greater than $1 million, an HRRP penalty of $2 million or more, or both. These outliers were removed only for display purposes and were included in the regression fit of the data. The vertical dashed line in each graph represents the cutoff for the upper quartile on each measure used to define safety-net hospitals in **Table 2**. DSH = disproportionate share hospital; HRRP = Hospital Readmissions Reduction Program; UCC = uncompensated care; VBP = value-based purchasing.

useful because they are assumed to be within the hospital's control and can be evaluated relatively easily (29). However, their use may not always result in improved outcomes, which patients value most (30, 31). Using health outcomes as a metric of value is perceived by other experts as problematic because severity of illness and social challenges that affect patient health—an especially important issue at safety-net hospitals—may not be fully captured in the adjustment models (4, 21, 23, 24). Using patient experience metrics, although potentially valuable, can be problematic because they represent subjective attitudes that can vary according to patient demographic characteristics and may not always reflect the actual quality of care provided. Our finding that safety-net hospitals had worse VBP average process scores but similar VBP average survival scores aligns with a growing body of research that suggests that process scores do not always predict health outcomes (32–42).

Our study has limitations. Alternative definitions of safety-net hospital could result in slightly different results (22). We believe that our 2 definitions are salient to the hospitals serving a large proportion of the low-income Medicare population, which are likely to be more reliant on such revenue. Also, although our study examines the financial effect of VBP and the HRRP on safety-net hospitals in 2014, it does not examine whether the programs result in better care. One recent study found that VBP has not yet improved hospital care that is consistent with earlier studies, but this finding should be examined further (43).

Safety-net hospitals are more likely to be penalized and less likely to gain or break even under Medicare's VBP and HRRP relative to other hospitals. Although concerns about their effect on the financial position of these hospitals are appropriate, the total dollar amount involved in 2014 is small for most hospitals. Quality-improvement programs will probably continue to play an increasing role in determining hospital payments in future years, and the cumulative effects could be much larger. As such, ongoing refinement about what constitutes "value" in hospital care and how strong the incentives should be is warranted to avoid unduly affecting U.S. safety-net hospitals and, in turn, the patients they serve.

From Rollins School of Public Health, Emory University, Atlanta, Georgia; Clinical Excellence Research Center, Stanford School of Medicine, Palo Alto, California; and Brown University School of Public Health, Providence, Rhode Island.

Disclaimer: All statements in this article, including its findings and conclusions, are solely those of the authors and do not necessarily represent the views of the Patient-Centered Outcomes Research Institute, its board of governors, or its methodology committee.

Grant Support: By the Patient-Centered Outcomes Research Institute Pilot Project Program Award (grant 1IP2PI000167-01).

Disclosures: Mr. Gilman reports grants from the Patient-Centered Outcomes Research Institute during the conduct of the study. Dr. Hockenberry reports grants from the Patient-Centered Outcomes Research Institute during the conduct of the study. Authors not named here have disclosed no conflicts of interest. Forms can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-2813.

Reproducible Research Statement: *Study protocol, statistical code, and data set:* Available from Dr. Hockenberry (e-mail, jason.hockenberry@emory.edu).

Requests for Single Reprints: Jason M. Hockenberry, PhD, Department of Health Policy and Management, Rollins School of Public Health, Emory University, 1518 Clifton Road, Atlanta, GA 30322; e-mail, jason.hockenberry@emory.edu.

Current author addresses and author contributions are available at www.annals.org.

References

1. Patient Protection and Affordable Care Act, Pub. L. No. 111-148, 124 Stat 119 (2010):318-9.
2. **Department of Health and Human Services.** Section V: Other decisions and changes to IPPS; Subsection H: Hospital value based purchasing. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Fiscal Year 2014 Rates; Quality Reporting Requirements for Specific Providers; Hospital Conditions of Participation; Payment Policies Related to Patient Status. Fed Regist. 2013;78:50676-729.
3. **Department of Health and Human Services.** Section V: Other decisions and changes to IPPS; Subsection G: Hospital Readmissions Reduction Program. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Fiscal Year 2014 Rates; Quality Reporting Requirements for Specific Providers; Hospital Conditions of Participation; Payment Policies Related to Patient Status. Fed Regist. 2013;78:50649-76.
4. **Rau J.** Medicare Discloses Hospitals' Bonuses, Penalties Based on Quality. Kaiser Health News. 20 December 2012. Accessed at http://khn.org/news/medicare-hospitals-value-based-purchasing on 27 July 2015.
5. **Rau J.** Medicare to Penalize 2,217 Hospitals for Excess Readmissions. Kaiser Health News. 13 August 2012. Accessed at http://khn.org/news/medicare-hospitals-readmissions-penalties/ on 20 July 2015.
6. **The Henry J. Kaiser Family Foundation.** The Facts on Medicare Spending and Financing. 2014. Accessed at http://kff.org/medicare/fact-sheet/medicare-spending-and-financing-fact-sheet on 31 March 2015.
7. **Chatterjee P, Joynt KE, Orav EJ, Jha AK.** Patient experience in safety-net hospitals: implications for improving care and value-based purchasing. Arch Intern Med. 2012;172:1204-10. [PMID: 22801941] doi:10.1001/archinternmed.2012.3158
8. **Gilman M, Adams EK, Hockenberry JM, Wilson IB, Milstein AS, Becker ER.** California safety-net hospitals likely to be penalized by ACA value, readmission, and meaningful-use programs. Health Aff (Millwood). 2014;33:1314-22. [PMID: 25092831] doi:10.1377/hlthaff.2014.0138
9. **Goldman LE, Vittinghoff E, Dudley RA.** Quality of care in hospitals with a high percent of Medicaid patients. Med Care. 2007;45:579-83. [PMID: 17515786]
10. **Hasnain-Wynia R, Baker DW, Nerenz D, Feinglass J, Beal AC, Landrum MB, et al.** Disparities in health care are driven by where minority patients seek care: examination of the hospital quality alliance measures. Arch Intern Med. 2007;167:1233-9. [PMID: 17592095]
11. **Jha AK, Orav EJ, Li Z, Epstein AM.** Concentration and quality of hospitals that care for elderly black patients. Arch Intern Med. 2007;167:1177-82. [PMID: 17563027]
12. **Neuhausen K, Katz MH.** Patient satisfaction and safety-net hospitals: carrots, not sticks, are a better approach [Editorial]. Arch Intern Med.2012;172:1202-3.[PMID:22801954]doi:10.1001/archinternmed.2012.3175
13. **Ross JS, Bernheim SM, Lin Z, Drye EE, Chen J, Normand SL, et al.** Based on key measures, care quality for Medicare enrollees at safety-net and non-safety-net hospitals was almost equal. Health Aff (Millwood). 2012;31:1739-48. [PMID: 22869652] doi:10.1377/hlthaff.2011.1028
14. **Ross JS, Cha SS, Epstein AJ, Wang Y, Bradley EH, Herrin J, et al.** Quality of care for acute myocardial infarction at urban safety-net hospitals. Health Aff (Millwood). 2007;26:238-48. [PMID: 17211034]
15. **James J.** Medicare Hospital Readmissions Reduction Program. Health Aff (Millwood): Health Policy Briefs. 12 November 2013. Accessed at www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=102 on 1 December 2014.
16. **Mohan A, Grant J, Batalden M, McCormick D.** The health of safety net hospitals following Massachusetts health care reform: changes in volume, revenue, costs, and operating margins from 2006 to 2009. Int J Health Serv. 2013;43:321-35. [PMID: 23821908]
17. **Kind AJ, Jencks S, Brock J, Yu M, Bartels C, Ehlenbach W, et al.** Neighborhood socioeconomic disadvantage and 30-day rehospitalization: a retrospective cohort study. Ann Intern Med. 2014;161:765-74. [PMID: 25437404] doi:10.7326/M13-2946
18. **Krumholz HM, Bernheim SM.** Considering the role of socioeconomic status in hospital outcomes measures [Editorial]. Ann Intern Med. 2014;161:833-4. [PMID: 25437411] doi:10.7326/M14-2308
19. **Keyhani S, Myers LJ, Cheng E, Hebert P, Williams LS, Bravata DM.** Effect of clinical and social risk factors on hospital profiling for stroke readmission: a cohort study. Ann Intern Med. 2014;161:775-84. [PMID: 25437405] doi:10.7326/M14-0361
20. **Lipstein SH, Dunagan WC.** The risks of not adjusting performance measures for sociodemographic factors. Ann Intern Med. 2014;161:594-6. [PMID: 25048401] doi:10.7326/M14-1601
21. **Burgess JF, Hockenberry JM.** Can all cause readmission policy improve quality or lower expenditures? A historical perspective on current initiatives. Health Econ Policy Law. 2014;9:193-213. [PMID: 23987089] doi:10.1017/S1744133113000340
22. **Hockenberry JM, Burgess JF Jr, Glasgow J, Vaughan-Sarrazin M, Kaboli PJ.** Cost of readmission: can the Veterans Health Administration (VHA) experience inform national payment policy? Med Care. 2013;51:13-9. [PMID: 22683595] doi:10.1097/MLR.0b013e31825c2fec
23. **Hockenberry JM, Burgess JF, Kaboli PJ.** Should hospital readmissions be reduced through payment penalties: a response to Dr Pizer [Editorial]. Med Care. 2013;51:23-4. [PMID: 23222468] doi:10.1097/MLR.0b013e3182785a5d
24. **Gu Q, Koenig L, Faerberg J, Steinberg CR, Vaz C, Wheatley MP.** The Medicare Hospital Readmissions Reduction Program: potential unintended consequences for hospitals serving vulnerable populations. Health Serv Res. 2014;49:818-37. [PMID: 24417309] doi:10.1111/1475-6773.12150
25. **Suter LG, Vellanky S, Li S-X, Strait K, Eddy E, Okai M, et al.** Medicare hospital quality chartbook 2012: performance report on out-

come measures. Baltimore, MD: Centers for Medicare & Medicaid Services; 2012.
26. **Horwitz L, Partovian C, Lin Z, Herrin J, Grady J, Conover M, et al.** Hospital-wide all-cause unplanned readmission measure: final technical report. Baltimore, MD: Centers for Medicare & Medicaid Services; 2012.
27. **Bernheim SM, Grady JN, Spivack S, Bartczak K, Bhat KR, Desai MM, et al.** 2012 measures maintenance technical report: acute myocardial infarction, heart failure, and pneumonia 30-day risk-standardized readmission measure. Baltimore, MD: Centers for Medicare & Medicaid Services; 2012.
28. **Gilman M, Adams EK, Hockenberry JM, Milstein AS, Wilson IB, Becker ER.** Safety-net hospitals more likely than other hospitals to fare poorly under Medicare's value-based purchasing. Health Aff (Millwood). 2015;34:398-405. [PMID: 25732489] doi:10.1377/hlthaff.2014.1059
29. **Nardin R, Zallman L, McCormick D, Woolhandler S, Himmelstein D.** The Uninsured After Implementation of the Affordable Care Act: A Demographic and Geographic Analysis. Health Affairs Blog. Bethesda, MD: Project HOPE; 2013. Accessed at http://healthaffairs.org/blog/2013/06/06/the-uninsured-after-implementation-of-the-affordable-care-act-a-demographic-and-geographic-analysis on 8 July 2015.
30. Disproportionate Share Hospital (DSH). Baltimore, MD: Centers for Medicare & Medicaid Services; 2014. Accessed at www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/dsh.html on 20 July 2015.
31. **McHugh M, Kang R, Hasnain-Wynia R.** Understanding the safety net: inpatient quality of care varies based on how one defines safety-net hospitals. Med Care Res Rev. 2009;66:590-605. [PMID: 19398722] doi:10.1177/1077558709334895
32. **Aaronson DS, Bardach NS, Lin GA, Chattopadhyay A, Goldman LE, Dudley RA.** Prediction of hospital acute myocardial infarction and heart failure 30-day mortality rates using publicly reported performance measures. J Healthc Qual. 2013;35:15-23. [PMID: 22093186] doi:10.1111/j.1945-1474.2011.00173.x
33. **Berenson RA, Pronovost PJ, Krumholz HM.** Achieving the Potential of Health Care Performance Measures: Timely Analysis of Immediate Health Policy Issues. Princeton, NJ: Robert Wood Johnson Foundation; 2013. Accessed at www.rwjf.org/en/library/research/2013/05/achieving-the-potential-of-health-care-performance-measures.html on 20 July 2015.
34. **Bradley EH, Herrin J, Elbel B, McNamara RL, Magid DJ, Nallamothu BK, et al.** Hospital quality for acute myocardial infarction: correlation among process measures and relationship with short-term mortality. JAMA. 2006;296:72-8. [PMID: 16820549]
35. **Fonarow GC, Abraham WT, Albert NM, Stough WG, Gheorghiade M, Greenberg BH, et al; OPTIMIZE-HF Investigators and Hospitals.** Association between performance measures and clinical outcomes for patients hospitalized with heart failure. JAMA. 2007;297:61-70. [PMID: 17200476]
36. **Fonarow GC, Peterson ED.** Heart failure performance measures and outcomes: real or illusory gains. JAMA. 2009;302:792-4. [PMID: 19690314] doi:10.1001/jama.2009.1180
37. **Jha AK.** Time to get serious about pay for performance. JAMA. 2013;309:347-8. [PMID: 23340633] doi:10.1001/jama.2012.196646
38. **Jha AK, Orav EJ, Epstein AM.** Public reporting of discharge planning and rates of readmissions. N Engl J Med. 2009;361:2637-45. [PMID: 20042755] doi:10.1056/NEJMsa0904859
39. **Nicholas LH, Osborne NH, Birkmeyer JD, Dimick JB.** Hospital process compliance and surgical outcomes in Medicare beneficiaries. Arch Surg. 2010;145:999-1004. [PMID: 20956770] doi:10.1001/archsurg.2010.191
40. **Romley JA, Jena AB, Goldman DP.** Hospital spending and inpatient mortality: evidence from California. An observational study. Ann Intern Med. 2011;154:160-7. [PMID: 21282695] doi:10.7326/0003-4819-154-3-201102010-00005
41. **Ryan AM, Burgess JF Jr, Tompkins CP, Wallack SS.** The relationship between Medicare's process of care quality measures and mortality. Inquiry. 2009;46:274-90. [PMID: 19938724]
42. **Werner RM, Bradlow ET.** Relationship between Medicare's hospital compare performance measures and mortality rates. JAMA. 2006;296:2694-702. [PMID: 17164455]
43. **Ryan AM, Burgess JF Jr, Pesko MF, Borden WB, Dimick JB.** The early effects of Medicare's mandatory hospital pay-for-performance program. Health Serv Res. 2015;50:81-97. [PMID: 25040485] doi:10.1111/1475-6773.12206

Current Author Addresses: Mr. Gilman and Drs. Hockenberry, Adams, and Becker: Department of Health Policy and Management, Rollins School of Public Health, Emory University, 1518 Clifton Road, Atlanta, GA 30322.
Dr. Milstein: Clinical Excellence Research Center, Stanford School of Medicine, 75 Alta Road, Stanford, CA 94305.
Dr. Wilson: Department of Health Services, Policy & Practice, Brown University School of Public Health, Box G-S121-7, Providence, RI 02912.

Author Contributions: Conception and design: M. Gilman, J.M. Hockenberry, E.K. Adams, E.R. Becker.
Analysis and interpretation of the data: M. Gilman, J.M. Hockenberry, E.K. Adams, I.B. Wilson, E.R. Becker.
Drafting of the article: M. Gilman, J.M. Hockenberry, E.K. Adams, A.S. Milstein, I.B. Wilson, E.R. Becker.
Critical revision of the article for important intellectual content: M. Gilman, J.M. Hockenberry, I.B. Wilson, E.R. Becker.
Final approval of the article: M. Gilman, J.M. Hockenberry, E.K. Adams, A.S. Milstein, I.B. Wilson, E.R. Becker.
Statistical expertise: M. Gilman, J.M. Hockenberry, E.K. Adams.
Obtaining of funding: E.R. Becker.
Administrative, technical, or logistic support: M. Gilman.
Collection and assembly of data: M. Gilman, E.R. Becker.

Appendix: DSH and UCC Payment Details

This information is derived from the FY 2014 final rule (44).

Section 3133 of the ACA specifies that the hospital DSH payment system should be transitioned to a combination of DSH payments and UCC payments. Hospitals will continue to receive 25% of the original DSH payment amount they would have under the previous policy. The remaining 75% will be divided among DSH hospitals on the basis of the following (30):

Additional payment for UCC: The remainder, equal to 75% of what otherwise would have been paid as Medicare DSH will become available for UCC payments after the amount is reduced for changes in the percentage of individuals who are uninsured. Each Medicare DSH hospital will receive a UCC payment based on its share of insured low income days (that is, the sum of Medicaid days and Medicare SSI days) reported by Medicare DSH hospitals.

Each hospital's UCC payment is the product of 3 factors: 75% of the estimated DSH payments that would otherwise be made under the old DSH methodology (section [d][5][F] of the Social Security Act); 1 minus the percent change in the percent of individuals younger than 65 years who are uninsured (minus 0.1 percentage point for FY 2014, and minus 0.2 percentage point for FY 2015 through FY 2017); and a hospital's amount of UCC relative to the amount of UCC for all DSH hospitals expressed as a percentage.

For FY 2014 and FY 2015, we are determining a hospital's amount of UCC based on a Medicare DSH hospital's share of insured low income days, or the sum of a hospital's Medicare (SSI) days and Medicaid days.

The final paragraph states that the CMS will measure UCC differences based on a hospital's national share of the Medicare SSI days and Medicaid days.

The concordance between DSH patient percentages and UCC per bed quartiles is in Appendix Table 1.

VBP Details

Under the VBP program, hospitals can gain or lose as much as 1.25% in Medicare payment in FY 2014. Hospitals participating in VBP receive a payment adjustment based on their performance on 3 quality metrics: process-of-care scores, patient experience scores, and mortality scores. In determining the VBP payment adjustments, the process score was weighted by 45%, the patient experience score by 30%, and the mortality score by 25% (this changed to 20%, 30%, and 30%, respectively, in 2015; efficiency scores are now weighted by 20%).

The process-of-care scores measure the degree to which hospitals follow evidence-based clinical guidelines in the processes of care for patients with major conditions, such as AMI, HF, and pneumonia (45). Specifically for the process-of-care domain, the measures are as follows:

Acute Myocardial Infarction (AMI or Heart Attack)

AMI-7a: Patients with heart attack given fibrinolytic medication within 30 minutes of arrival

AMI-8a: Patients with heart attack given percutaneous coronary intervention within 90 minutes of arrival

Heart Failure (HF)

HF-1: Patients with heart failure given discharge instructions

Pneumonia (PN)

PN-3b: Patients with pneumonia whose initial emergency deparemtn blood culture was performed before the administration of the first hospital dose of antibiotics

PN-6: Patients with pneumonia given the most appropriate initial antibiotic(s)

Surgical Care Improvement Project (SCIP)

SCIP-Card-2: Surgery patients who were taking β-blockers before coming to the hospital, who were kept on the β-blockers during the period just before and after surgery

SCIP-VTE-2: Patients who got treatment at the right time (within 24 hours before or after surgery) to help prevent blood clots after certain types of surgery

Health Care–Associated Infections

SCIP–Inf–1: Surgery patients who are given an antibiotic at the right time (within 1 hour before surgery) to help prevent infection

SCIP–Inf–2: Surgery patients who are given the right kind of antibiotic to help prevent infection

SCIP–Inf–3: Surgery patients whose preventive antibiotics are stopped at the right time (within 24 hours after surgery)

SCIP–Inf–4: Heart surgery patients whose blood sugar (blood glucose) is kept under good control in the days right after surgery

SCIP–Inf–9: Surgery patients whose urinary catheters were removed on the first or second day after surgery

The patient experience scores measure the extent to which patients are satisfied with their experience at the hospital in general (46). For the patient experience domain, the measures in FY 2014 were (and remain for FY 2015) as follows:

Communication With Nurses: Shown as the percentage of patients who reported that their nurses "always" communicated well. This means nurses explained things clearly, listened carefully, and treated the patient with courtesy and respect.

Communication With Doctors: Shown as the percentage of patients who reported that their doctors "always" communicated well. This means doctors explained things clearly, listened carefully, and treated the patient with courtesy and respect.

Responsiveness of Hospital Staff: Shown as the percentage of patients who reported that hospital staff were "always" responsive to their needs. This means the patient was helped quickly when he or she used the call button or needed help in getting to the bathroom or using a bedpan.

Pain Management: Shown as the percentage of patients who reported that their pain was "always" well-controlled. This means the patient's pain was well-controlled and hospital staff did everything they could to help.

Cleanliness and Quietness of the Hospital Environment: Shown as the percentage of patients who reported that the hospital environment was "always" clean and quiet. This means the patient's hospital room and bathroom were kept clean and the area around the patient's room was quiet at night.

Communication About Medicines: Shown as the percentage of patients who reported that staff "always" explained about medicines. This means the staff told patient what the medicine was for and what side effects it might have before they gave it to the patient.

Discharge Information: Shown as percentage of patients who reported they were given information about what to do during their recovery at home. This means the hospital staff discussed the help that the patient would need at home and the patient was given written information about symptoms or health problems to watch for during recovery.

Overall Rating of Hospital: Shown as percentage of patients whose overall rating of the hospital was on a scale from 0 (low) to 10 (high).

In FY 2014, the mortality score measures performance on clinical risk-adjusted 30-day mortality for AMI, HF, and pneumonia. Details on this and the expanded outcome measures for FY 2015 are available at www.medicare.gov/HospitalCompare/Data/outcome-domain.html.

For each performance metric, the hospital is assigned 2 scores: 1 for actual performance and another for performance improvement. The higher of the 2 scores is then used to determine the hospital's payment adjustment. Although a hospital could gain or lose up to 1.25% of payment in 2014, that amount will increase nominally each year until 2017, when the maximum payment increase or reduction a hospital could receive under VBP will be 2.0% of payment.

HRRP Details

Under the HRRP, hospitals can lose as much as an additional 2.0% in Medicare payment in 2014. The formula for this is complex and was established under the FY 2013 Inpatient Prospective Payment System/Long Term Care Hospital PPS final rule (47). The formula is based on excess readmissions for 3 conditions: AMI, HF, and pneumonia (these will expand to include chronic obstructive pulmonary disease and total knee and hip arthroplasty for FY 2015). The general formula (48) for computing the reimbursement ratio (when each hospital's readmission factor is available for FY 2013 and FY 2014) follows:

Formulas to Calculate the Readmission Adjustment Factor

Excess readmission ratio = risk-adjusted predicted readmissions/risk-adjusted expected readmissions

Aggregate payments for excess readmissions = [sum of base operating DRG payments for AMI × (excess readmission ratio for AMI − 1)] + [sum of base operating DRG payments for HF × (excess readmission ratio for HF − 1)] + [sum of base operating DRG payments for pneumonia × (excess readmission ratio for pneumonia − 1)]

Note, if a hospital's excess readmission ratio for a condition is less than or equal to 1, then there are no aggregate payments for excess readmissions for that condition included in this calculation.

Aggregate payments for all discharges = sum of base operating DRG payments for all discharges

Ratio = 1 − (aggregate payments for excess readmissions/aggregate payments for all discharges)

Readmissions Adjustment Factor =

For FY 2013, the higher of the ratio or 0.99 (1% reduction);

For FY 2014, the higher of the ratio or 0.98 (2% reduction);

For FY 2015, the higher of the ratio or 0.97 (3% reduction).

The readmission payment adjustment amount is then calculated as follows: readmissions payment adjustment amount = (hospital's base operating DRG payment amount × hospital's readmissions adjustment factor) − hospital's base operating DRG payment amount.

Web-Only References

44. **United States Government Printing Office.** FY 2014 final rule. 42 CFR Ch. IV (10-1-14 Edition):606-12. Accessed at www.gpo.gov/fdsys/pkg/CFR-2014-title42-vol2/pdf/CFR-2014-title42-vol2-sec412-106.pdf on 20 July 2015.

45. **Medicare.gov.** Clinical process of care domain. Accessed at www.medicare.gov/HospitalCompare/Data/Clinical-Process-of-Care.html on 20 July 2015.

46. **Medicare.gov.** Patient experience of care domain. Accessed at www.medicare.gov/HospitalCompare/Data/Patient-Experience-Domain.html on 20 July 2015.

47. **Centers for Medicare & Medicaid Services.** FY 2013 IPPS Final Rule Home Page. Accessed at www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/FY-2013-IPPS-Final-Rule-Home-Page.html on 20 July 2015.

48. **Centers for Medicare & Medicaid Services.** Readmissions Reduction Program. Accessed at www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html on 20 July 2015.

Appendix Table 1. Correspondence Among Quartile Rankings on Measures of Hospital Safety-Net Status

UCC per Bed Quartile Ranking	DSH Patient Percent Quartile Ranking			
	First Quartile (Lowest)	**Second Quartile**	**Third Quartile**	**Fourth Quartile (Highest)**
First quartile (lowest)	479	35	10	5*
Second quartile	116	406	223	83
Third quartile	27	337	338	135
Fourth quartile (highest)	0	37	237	554

DSH = disproportionate share hospital; UCC = uncompensated care.
* These hospitals had very discordant rankings on these measures, which were driven by their size. The hospitals in this category had 27, 32, 48, 49, and 125 beds. Because DSH patient percentage was calculated based on within-hospital share of Medicare supplementary Social Security income and Medicaid days (which are quite high for these hospitals) but UCC payments were based on each hospital's burden as a share of the national burden among DSH, these small hospitals would receive relatively small UCC payments despite having a high DSH patient percentage.

Appendix Table 2. Characteristics of 756 SNHs, by Size of Overall Effect of VBP and the HRRP: 2014*

Characteristic	SNHs With Small† or No Overall Rate Reduction (*n* = 475)	SNHs With Large‡ Overall Rate Reduction (*n* = 281)	*P* Value
Mean payment rate reduction, %	−0.13	−0.92	<0.0001
Mean estimated payment reduction, $	−45 000	−235 000	<0.0001
Bed size, %			
Small (<100 beds)	24	22	0.6325
Medium (100–299 beds)	43	42	0.8109
Large (≥300 beds)	34	36	0.5024
Ownership, %			
Nonprofit	51	50	0.8380
For-profit	27	23	0.2711
Government	22	27	0.1731
Teaching, %			
Yes	19	17	0.6173
Region, %			
Northeast	8	22	<0.0001
Midwest	25	22	0.4902
South	37	32	0.1068
West	30	24	0.0911
Setting, %			
Urban	76	69	0.0331
Mean Medicare UCC payment, $	6 175 000	6 431 000	0.6225

HRRP = Hospital Readmissions Reduction Program; SNH = safety-net hospital; UCC = uncompensated care; VBP = value-based purchasing.
* Authors' analysis of American Hospital Association survey data for 2011, Medicare Impact File data for 2014, and financial data from the Centers for Medicare & Medicaid Services for 2014. Percentages may not sum to 100 due to rounding.
† Rate reduction <0.50%.
‡ Rate reduction ≥0.50%.

Appendix Table 3. Technical Notes for Figures*

Hospital	Location	VBP Adjustment, $	HRRP Adjustment, $	DSH Patient Percentage	UCC Per Bed	Safety-Net Under DSH Top Quartile Definition?	Safety-Net Under UCC/Bed Top Quartile Definition?
Florida Hospital	Orange, FL	1 091 280	−2 638 740	0.28251	17 734	No	Yes
New York-Presbyterian	New York, NY	1 716 529	−1 333 500	0.43368	27 341	Yes	Yes
North Shore University	Nassau County, NY	−400 207	−2 104 060	0.1875	14 777	No	No

DSH = disproportionate share hospital; HRRP = Hospital Readmissions Reduction Program; UCC = uncompensated care; VBP = value-based purchasing.
* Figures 1 to 3 are versions with 3 outliers removed to shorten the *y*-axis and provide more detail. The outliers were hospitals that had a VBP adjustment greater than $1 million, an HRRP penalty of $2 million or more, or both. These outliers were removed only for display purposes, but they were included in the regression fit of the data. The information for these hospitals is shown here.