

Health Affairs

At the Intersection of Health, Health Care and Policy

Cite this article as:

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

Safety-Net Hospitals More Likely Than Other Hospitals To Fare Poorly Under Medicare's Value-Based Purchasing
Health Affairs, 34, no.3 (2015):398-405

doi: 10.1377/hlthaff.2014.1059

The online version of this article, along with updated information and services, is available at:

<http://content.healthaffairs.org/content/34/3/398.full.html>

For Reprints, Links & Permissions:

http://healthaffairs.org/1340_reprints.php

E-mail Alerts : <http://content.healthaffairs.org/subscriptions/etoc.dtl>

To Subscribe: <http://content.healthaffairs.org/subscriptions/online.shtml>

Health Affairs is published monthly by Project HOPE at 7500 Old Georgetown Road, Suite 600, Bethesda, MD 20814-6133. Copyright © 2015 by Project HOPE - The People-to-People Health Foundation. As provided by United States copyright law (Title 17, U.S. Code), no part of *Health Affairs* may be reproduced, displayed, or transmitted in any form or by any means, electronic or mechanical, including photocopying or by information storage or retrieval systems, without prior written permission from the Publisher. All rights reserved.

Not for commercial use or unauthorized distribution

By Matlin Gilman, E. Kathleen Adams, Jason M. Hockenberry, Arnold S. Milstein, Ira B. Wilson, and Edmund R. Becker

DOI: 10.1377/hlthaff.2014.1059
HEALTH AFFAIRS 34,
NO. 3 (2015): 398-405
©2015 Project HOPE—
The People-to-People Health
Foundation, Inc.

Safety-Net Hospitals More Likely Than Other Hospitals To Fare Poorly Under Medicare's Value-Based Purchasing

Matlin Gilman is a research assistant in the Department of Health Policy and Management at the Rollins School of Public Health, Emory University, in Atlanta, Georgia.

E. Kathleen Adams is a professor in the Department of Health Policy and Management at the Rollins School of Public Health, Emory University.

Jason M. Hockenberry (jason.hockenberry@emory.edu) is an assistant professor in the Department of Health Policy and Management at the Rollins School of Public Health, Emory University.

Arnold S. Milstein is a professor of medicine in the Center for Clinical Excellence at the Stanford University School of Medicine, in California.

Ira B. Wilson is a professor of Community Health at Brown University, in Providence, Rhode Island.

Edmund R. Becker is a professor in the Department of Health Policy and Management at the Rollins School of Public Health, Emory University.

ABSTRACT Medicare's value-based purchasing (VBP) program potentially puts safety-net hospitals at a financial disadvantage compared to other hospitals. In 2014, the second year of the program, patient mortality measures were added to the VBP program's algorithm for assigning penalties and rewards. We examined whether the inclusion of mortality measures in the second year of the program had a disproportionate impact on safety-net hospitals nationally. We found that safety-net hospitals were more likely than other hospitals to be penalized under the VBP program as a result of their poorer performance on process and patient experience scores. In 2014, 63 percent of safety-net hospitals versus 51 percent of all other sample hospitals received payment rate reductions under the program. However, safety-net hospitals' performance on mortality measures was comparable to that of other hospitals, with an average VBP survival score of thirty-two versus thirty-one among other hospitals. Although safety-net hospitals are still more likely than other hospitals to fare poorly under the VBP program, increasing the weight given to mortality in the VBP payment algorithm would reduce this disadvantage.

Medicare's value-based purchasing (VBP) program, a key feature of the hospital payment reforms in the Affordable Care Act (ACA), is intended to incentivize high-value health care provided in the hospital setting by rewarding hospitals that perform well on value metrics while penalizing hospitals that do not.¹ Funding for the program comes from withholding a percentage of Medicare inpatient payments to prospectively paid hospitals and redistributing those dollars according to each hospital's performance on certain measures of value.² The program, which entered its second year in 2014, is budget-neutral, meaning that the hospitals that receive higher payments do so at the expense of

other hospitals. In fiscal year 2013 the VBP program resulted in higher Medicare inpatient payment rates for 1,557 hospitals and lower payment rates for 1,427 hospitals.³ These bonuses and penalties under VBP involved a redistribution of almost \$1 billion among hospitals.³

Given the potential for hospitals to lose money under VBP, there is growing concern among health policy experts that safety-net hospitals could be particularly vulnerable to losses under the program. Such hospitals often perform worse on the value metrics that currently have the greatest weight in the VBP program: process-of-care measures and patient experience measures.⁴⁻⁹

The concern that safety-net hospitals could be adversely affected under VBP is compounded

both by the fact that safety-net hospitals often operate on negative or otherwise low operating margins and by the potential for safety-net hospitals to be affected by imminent reductions in the additional revenue hospitals receive for serving low-income patients.¹⁰ The ACA has mandated that as the number of people with health insurance coverage rises, an important source of revenue for safety-net hospitals will be reduced: the disproportionate-share hospital (DSH) payments that hospitals receive from Medicare and Medicaid for serving disproportionately high numbers of poor patients covered by those insurance programs and for providing uncompensated care to the poor.¹¹ Since safety-net hospitals are much more likely than other hospitals to benefit from DSH and uncompensated care payments and if the revenue that they lose as a result of the reductions in DSH payments is greater than the revenue that they gain from health insurance coverage expansions, then the net result for some hospitals could be a significant financial loss.

Another concern among health policy experts is that safety-net hospitals are very likely to have high readmission rates and, therefore, to be penalized under Medicare's Hospital Readmissions Reduction Program (HRRP), the other major quality improvement program included in the ACA.^{6,12-14}

In the first year of the VBP program, hospitals could gain or lose as much as 1 percent in Medicare payment under VBP. Two metrics were used in the first year to determine payment adjustments: process-of-care scores and patient experience scores.² In determining the payment adjustments, the process score was weighted by 70 percent and the patient experience score by 30 percent.² The process scores measure the degree to which hospitals follow evidence-based clinical guidelines in the processes of care for patients with major conditions such as acute myocardial infarction, heart failure, and pneumonia. The patient experience scores measure the extent to which patients are satisfied with their experience at the hospital in general.¹⁵ For each metric, the hospital is assigned two scores—one for actual performance and another for improvement in performance—and the greater of the two scores is then used to determine the hospital's VBP payment adjustment.

In 2014 hospitals could gain or lose up to 1.25 percent in Medicare payment under the VBP program. In addition, the Centers for Medicare and Medicaid Services (CMS) introduced mortality as an additional metric to determine the payment adjustment. The weighting of VBP payment adjustments is currently 45 percent for the process score, 30 percent for the patient ex-

perience score, and 25 percent for the mortality score.² The mortality score measures performance on thirty-day mortality for acute myocardial infarction, heart failure, and pneumonia.² Just as for the process and patient experience metrics, for the mortality metric the hospital receives one score for actual performance and one score for improvement. The greater of the two scores is then used in determining the payment adjustment. The hospital's score for actual performance on mortality is based on its performance during the period from July 1, 2011, to June 30, 2012, and its score for improvement in mortality is based on its performance in that time period relative to its performance the year prior (from July 1, 2009, to June 30, 2010).² Although a hospital could gain or lose up to 1.25 percent of payment in 2014, that amount will increase nominally each year until 2017, when the maximum payment rate increase or reduction a hospital can receive under VBP will be 2.0 percent of payment.²

The VBP payment adjustment that the hospital receives is applied as a multiplier to the base Medicare operating inpatient payment to the hospital.¹⁶ For example, a hospital with a VBP payment adjustment of 0.9945 will be paid 99.45 percent of what Medicare would normally pay for each inpatient hospital service.¹⁶ That is, if the hospital normally were paid \$10,000 for a certain inpatient service, it would instead be paid \$9,945.

Hospitals that care for a disproportionately high number of low-income patients often perform worse than other hospitals on process-of-care and patient experience measures and are, therefore, at greater risk of losing financially under VBP.^{4,7-9} Our previous study showed that safety-net hospitals in California were more likely than other California hospitals to incur penalties in the first year of VBP, despite having better performance on mortality.⁶ With this new study, we used national data to attempt to determine whether safety-net hospitals nationally are more likely than other hospitals to fare poorly in the second year of the VBP program and whether including mortality scores in the program will disadvantage or aid safety-net hospitals both now and in future years.

Study Data And Methods

DATA We used six data sources to assemble the measures needed for our analysis: data from CMS containing the VBP payment adjustment amount and the process, patient experience, and mortality scores of each participating hospital in 2014; the Medicare impact file for 2014, which contains hospital payment information;

Hospital Compare data for 2014 for tracking mortality; data from CMS containing the total base Medicare operating inpatient payment in 2011 for each hospital; data from CMS containing the projected Medicare uncompensated care payment for each hospital in 2014; and American Hospital Association (AHA) survey data for 2011.

SAMPLE Our sample was drawn from hospitals participating in the VBP program in 2014. These are acute care hospitals being paid prospectively under Medicare. Of the 2,728 hospitals participating in VBP, we excluded four hospitals with missing mortality data and twenty-nine hospitals with missing data on other characteristics that we sought to report. The thirty-three hospitals that we excluded were mostly small hospitals. Our sample included the remaining 2,695 hospitals.

SAFETY-NET HOSPITALS There is no standard approach to quantifying what constitutes a safety-net hospital. Conventionally, safety-net hospitals have been defined based on one of three measures: Medicaid caseloads, uncompensated care burden, or facility characteristics. In looking at hospital quality, the definition of *safety-net hospital* that one uses is known to result in different hospitals designated as having safety-net status.¹⁷

We defined *safety-net hospital* using a variant of the Medicaid caseload: the Medicare DSH patient percentage. This percentage is the sum of the proportion of a hospital's hospital days used by elderly patients receiving Supplemental Security Income and its proportion of nonelderly Medicaid patient days. Specifically, we defined *safety-net hospitals* as those hospitals with a DSH patient percentage in the highest quartile of our sample, as has been done in recent prior studies.^{4,6,18}

A major advantage of using the DSH patient percentage as opposed to just Medicaid caseload is that it identifies poor patients irrespective of their age.⁴ Using only the Medicaid caseload fails to identify low-income elderly patients whose hospital charges are covered by Medicare.⁴ A key advantage of using the DSH patient percentage instead of uncompensated care as a share of total expenses is that because there are wider differences across hospitals in the DSH patient percentage than in the ratio of uncompensated care to expenses, the DSH patient percentage is better able to identify hospitals that serve a large share of low-income patients.⁶ In addition, since hospitals serve more Medicaid patients than uninsured patients, the revenue involved in providing care for Medicaid patients represents a much larger share of the hospitals' total revenue than is the case for uncompensated care.⁶ The main disadvantage of this approach is that it may not fully

capture the impact of the proportion of uninsured patients on hospital finances. However, as insurance coverage expands, the Medicaid and Medicare inpatient shares are likely to be the more salient financial issue for hospitals.

VALUE-BASED PURCHASING ADJUSTMENTS Using data from 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 either subject to payment rate reductions or receiving payment rate increases of varying amounts under VBP. We also compared the average VBP process-of-care, patient experience, and mortality (survival) scores for safety-net and non-safety-net hospitals to determine whether the inclusion of the survival scores is having a disproportionate impact on safety-net hospitals.

Using data from CMS containing base Medicare operating inpatient payments to each hospital in 2011 (the most recent year of these financial data that we could obtain), we estimated the impact of VBP on hospitals in terms of revenue forfeited or gained under VBP in 2014 by multiplying the hospital's base Medicare operating inpatient payment by 1 minus the hospital's VBP payment adjustment. This assumes that the base Medicare operating payments to hospitals in 2011 will be roughly equal to the base Medicare operating payments to hospitals in 2014.

ACTUAL MORTALITY DURING 2009–12 To assess whether VBP could have a disproportionate impact on safety-net hospitals beyond 2014, we also examined a more robust mortality measure than the one used in VBP. As explained above, under VBP the hospital receives two mortality scores—one measuring actual performance and one measuring improved performance—and is assigned the greater of the two scores. In 2014 a hospital's actual performance score reflects performance during the one-year period from July 1, 2011, to June 30, 2012, whereas its improvement performance score reflects improvement in performance between the baseline period of July 1, 2009, to June 30, 2010, and the following year (July 1, 2011, to June 30, 2012). That is, the final VBP mortality score that the hospital receives is based upon either its actual mortality score over one year or its score for improvement compared to the prior year—whichever score is greater.

By contrast, the mortality rates reported in the Hospital Compare data are a more robust measure, in that they represent actual mortality rates averaged across the three-year period from July 2009 to June 2012. For example, one would be better able to predict that a hospital with a high mortality rate over a three-year period would be likely to continue having a high mor-

tality rate in the near future than would a hospital with a high mortality rate for just one year or a hospital with improvement in mortality over just one year. In other words, if we find that safety-net hospitals have worse VBP mortality scores in addition to worse actual mortality rates from 2009 to 2012, we could then say with greater confidence that these hospitals would be at risk of having worse mortality rates not just in 2014 but in subsequent years as well.

Using the Hospital Compare data, we compared the average thirty-day risk-adjusted mortality rates for acute myocardial infarction, heart failure, and pneumonia from the period 2009–12 for safety-net and non-safety-net hospitals. These rates are then presented as percentages of discharges in the respective diagnosis categories.

Using the Hospital Compare data, we also computed an overall mortality index measuring actual divided by expected mortality for acute myocardial infarction, heart failure, and pneumonia, across the period 2009–12. We defined *expected mortality* as the weighted national average mortality rate for each condition for all of the hospitals in our sample. We created the mortality index by taking the ratio of a hospital's mortality rate divided by the national average for each condition and the ratio of the hospital's patients with said condition divided by the sum of the hospital's patients with any one of the conditions; multiplying the ratios for said conditions; and summing the products.

This risk-adjusted overall mortality index represents the ratio of actual mortality rates versus expected mortality rates for each condition, weighted by the risk of mortality for each condition. By definition, the national overall mortality index is 1, a value below 1 represents better-than-expected mortality, and a value above 1 represents worse-than-expected mortality.

ANALYSIS We compared hospital characteristics across DSH patient percentage quartiles and collapsed the three lowest quartiles to form one cohort of non-safety-net hospitals. We used chi-square tests to determine if there were significant differences in the proportions of safety-net and non-safety-net hospitals that are being rewarded or penalized under VBP. We also used *t*-tests to determine if there were significant differences between safety-net and non-safety-net hospitals in average VBP process-of-care, patient experience, and mortality scores. Finally, we used *t*-tests to determine if there were statistical differences between safety-net and non-safety-net hospitals in average thirty-day risk-adjusted mortality rates for acute myocardial infarction, heart failure, and pneumonia averaged across the period 2009–12.

Study Results

HOSPITAL CHARACTERISTICS Of the 2,695 hospitals in our sample, 673 were defined as safety-net hospitals (Exhibit 1). Safety-net hospitals were more likely than other hospitals to be large (38 percent of safety-net hospitals versus 24 percent of all other sample hospitals had 300 or more beds) and to be either publicly owned or for profit. The finding that safety-net hospitals are more likely to be for profit, although perhaps surprising, is consistent with other studies.⁴ Safety-net hospitals were also more likely than other hospitals to be teaching hospitals, be located in either the South or the West, have lower Medicare caseloads (at safety-net hospitals, 39 percent of patient days were Medicare versus 51 percent at other hospitals), have higher Medicaid caseloads (at safety-net hospitals, 32 percent of patient days were Medicaid versus 18 percent at other hospitals), and receive larger Medicare uncompensated care payments (among safety-net hospitals, the average total Medicare uncompensated care payment was \$6,846,000 versus an average total payment of \$2,153,000 among other hospitals).

VALUE-BASED PURCHASING ADJUSTMENTS

When we examined the proportion of hospitals being subjected to VBP penalties, we found that safety-net hospitals were at greater risk of receiving reduced payments than other hospitals (Exhibit 2). We found that 63 percent of safety-net hospitals were receiving a reduced payment rate because of VBP, compared to 51 percent of all other sample hospitals; that 32 percent of safety-net hospitals were receiving a reduced payment rate of 0.25 percent or greater, compared to 21 percent of other hospitals; and that 10 percent of safety-net hospitals were receiving a reduced payment rate of 0.50 percent or greater, compared to 5 percent of other hospitals.

When we examined the proportion of hospitals that were gaining under VBP, we found that safety-net hospitals were also less likely than other hospitals to be receiving bonus payments (Exhibit 2). We found that 37 percent of safety-net hospitals were receiving an increased payment rate because of VBP, compared to 49 percent of all other sample hospitals; that 13 percent of safety-net hospitals were receiving an increased payment rate of 0.25 percent or greater, compared to 21 percent of other hospitals; and that 3 percent of safety-net hospitals were receiving an increased payment rate of 0.50 percent, compared to 4 percent of other hospitals.

When we estimated the payment reductions or increases that hospitals were experiencing under VBP, we found that the revenue hospitals were forfeiting or gaining under VBP was likely to be small (Exhibit 2). We estimated that in 2014

EXHIBIT 1

Characteristics Of 2,695 Hospitals Participating In Value-Based Purchasing, By Safety-Net Status And Medicare Disproportionate-Share Hospital (DSH) Patient Percentage Quartiles, 2014

Characteristic	Safety-net status			DSH quartile (4=safety net)			
	Safety net (n=673)	Other (n=2,022)	p value	1 (n=674)	2 (n=672)	3 (n=676)	4 (n=673)
BED SIZE							
Small (fewer than 100 beds) ^a	18%	26%	<0.001	29%	26%	23%	18%
Medium (100-299 beds) ^b	44	50	0.008	53	50	46	44
Large (300 or more beds) ^c	38	24	<0.001	18	24	30	38
OWNERSHIP							
Nonprofit ^d	54%	70%	<0.001	73%	75%	63%	54%
For-profit ^e	25	18	<0.001	19	15	21	25
Government ^f	21	11	<0.001	8	10	16	21
TEACHING							
Yes ^g	19%	6%	<0.001	4%	5%	10%	19%
CENSUS REGION							
Northeast ^h	14%	19%	0.009	24%	18%	13%	14%
Midwest ⁱ	25	38	<0.001	39	39	37	25
South ^j	33	28	0.009	23	27	33	33
West ^k	27	15	<0.001	14	15	17	27
SETTING							
Urban ^l	76%	74%	0.382	83%	70%	69%	76%
CASELOAD							
Share of Medicare patient days	39%	51%	<0.001	55%	51%	47%	39%
Share of Medicaid patient days	32	18	<0.001	12	18	21	32
UNCOMPENSATED CARE PAYMENT							
Average Medicare uncompensated care payment (thousands of dollars)	\$6,846	\$2,153	<0.001	\$690	\$2,203	\$3,561	\$6,846

SOURCES American Hospital Association survey data for 2011, Medicare impact file for 2014, and Hospital Compare data for 2014. **NOTE** Chi-square and t-tests were performed to test differences between safety-net hospitals and other hospitals. ^an = 648 (24 percent of the hospitals). ^bn = 1,304 (48 percent). ^cn = 743 (28 percent). ^dn = 1,787 (66 percent). ^en = 539 (20 percent). ^fn = 369 (14 percent). ^gn = 254 (9 percent). ^hn = 469 (17 percent). ⁱn = 941 (35 percent). ^jn = 790 (29 percent). ^kn = 495 (18 percent). ^ln = 2,008 (75 percent).

EXHIBIT 2

Impact Of Value-Based Purchasing (VBP) On Safety-Net And Non-Safety-Net Hospitals, 2014

Impact	Safety-net hospitals	Other hospitals	p value
Hospitals penalized under VBP	63%	51%	<0.001
Hospitals with rate reduction of 0.25% or greater	32	21	<0.001
Hospitals with rate reduction of 0.50% or greater	10	5	<0.001
Hospitals with estimated payment reduction of \$50,000 or greater	28	20	<0.001
Hospitals with estimated payment reduction of \$100,000 or greater	16	10	<0.001
Hospitals with estimated payment reduction of \$250,000 or greater	2	2	0.588
Hospitals gaining under VBP	37	49	<0.001
Hospitals with rate increase of 0.25% or greater	13	21	<0.001
Hospitals with rate increase of 0.50% or greater	3	4	0.220
Hospitals with estimated payment increase of \$50,000 or greater	15	21	<0.001
Hospitals with estimated payment increase of \$100,000 or greater	7	11	<0.001
Hospitals with estimated payment increase of \$250,000 or greater	2	3	0.327
VBP total performance score (mean)	43.9	47.4	<0.001
VBP process score (mean)	56.0	59.9	<0.001
VBP patient experience score (mean)	35.4	42.1	<0.001
VBP mortality (survival) score (mean)	32.1	31.4	0.416

SOURCES Hospital Compare data for 2014 and Medicare impact file for 2014. **NOTES** Sample sizes for safety-net and other hospitals are in Exhibit 1. Chi-square and t-tests were performed to test differences between safety-net hospitals and other hospitals.

only 28 percent of safety-net hospitals and only 20 percent of non-safety-net hospitals were receiving payment reductions of \$50,000 or greater because of VBP and that only 2 percent of both safety-net hospitals and other hospitals were receiving payment reductions of \$250,000 or greater. Similarly, we estimated that in 2014 only 15 percent of safety-net hospitals and only 21 percent of other hospitals were receiving payment increases of \$50,000 or greater and that only 2 percent of safety-net hospitals and only 3 percent of other hospitals were receiving payment increases of \$250,000 or greater.

When we compared VBP performance scores for safety-net and non-safety-net hospitals, we found that safety-net hospitals were significantly more likely to have a worse process score and worse patient experience score (Exhibit 2); the CMS algorithm is weighted in a such a way that these two factors constituted 75 percent of a hospital's potential VBP payment adjustment in 2014. The remaining 25 percent of a hospital's VBP payment adjustment in 2014 was driven by their survival score, and safety-net hospitals had a similar average survival score compared to other hospitals (32 versus 31); this difference was not significant.

ACTUAL MORTALITY DURING 2009–12 Exhibit 3 shows average thirty-day risk-adjusted mortality rates for acute myocardial infarction, heart failure, and pneumonia during 2009–12. For acute myocardial infarction, the average mortality rate among safety-net hospitals was 15.0 percent, compared to 14.8 percent among other hospitals. For heart failure, the average mortality rate among safety-net hospitals was 11.1 percent, compared to 11.6 percent among other hospitals. For pneumonia, the average mortality rate among safety-net hospitals was 11.9 percent, compared to 11.8 percent among other hospitals.

Across all three conditions, the average overall mortality index—measuring actual over expected mortality—among safety-net hospitals was 0.9894, compared to 1.0027. This finding indicates that safety-net hospitals' actual overall performance on mortality from 2009–12 was slightly better than that of non-safety-net hospitals. Almost 50 percent of safety-net hospitals had lower-than-expected mortality, compared to close to 46 percent of other hospitals.

Discussion

Our study has three main findings. First, safety-net hospitals were more likely than other hospitals to be penalized under VBP in 2014 as a result of their poorer performance on process and patient experience scores, which together accounted for 75 percent of a hospital's VBP payment adjustment in 2014. Second, although safety-net hospitals were more likely to be penalized under VBP, the program's use of mortality measures in 2014 did not have a disproportionate impact on those hospitals, whose actual performance on mortality for three conditions was slightly better than that of other hospitals. Third, although safety-net hospitals were faring worse than other hospitals under VBP, the impact of the program in revenues forfeited or gained in 2014 was likely to be small for most hospitals. Taken together, these results indicate that safety-net hospitals are providing better health outcomes than other hospitals yet are more likely to be penalized under a program that intends to improve and reward high performance.

In 2015 the VBP payment adjustment is to be weighted by 30 percent of the mortality (survival) score; 30 percent of the patient experience score; 20 percent of the process score; and 20 percent of a new score to be introduced mea-

EXHIBIT 3

Thirty-Day Risk-Adjusted Mortality Rates For Acute Myocardial Infarction, Heart Failure, And Pneumonia, By Safety-Net Status, 2009–12

	Safety-net hospitals	Other hospitals	p value
Mortality rate for:			
Acute myocardial infarction (463,023 patients)	15.0%	14.8%	0.002
Heart failure (901,491 patients)	11.1	11.6	<0.001
Pneumonia (843,213 patients)	11.9	11.8	0.323
Mortality index (actual divided by expected)	0.9894	1.0027	0.016
Hospitals with lower-than-expected mortality	49.9%	45.7%	0.054

SOURCES Hospital Compare data for 2014 and Medicare impact file for 2014. **NOTES** Sample sizes for safety-net and other hospitals are in Exhibit 1. Chi-square and t-tests were performed to test the differences between safety-net hospitals and other hospitals. The risk-adjusted mortality index represents the ratio of actual mortality rates over expected mortality rates for each condition, weighted by the risk of mortality for each condition. We consider expected mortality to be the weighted national average mortality rate for each condition. By definition, then, the national average mortality index is 1. A value below 1 should, therefore, be interpreted as better than expected, whereas a value above 1 should be interpreted as worse than expected. Like the average mortality indexes, the average thirty-day risk-adjusted mortality rates for each condition were weighted by the number of patients treated for the given condition.

suring cost efficiency.² We expect that this increase in the weighting of mortality scores and decrease in the weighting of process scores will benefit safety-net hospitals.

Defining what constitutes *value* in hospital-provided health care is complicated, and there is ongoing debate as to the meaning of *value* and how to incentivize it. Process scores are seen by some health policy experts as most important and useful in that they are assumed to be within hospitals' control and can be evaluated relatively easily.¹⁹ However, their use might not always bring about improved outcomes, which patients value most.^{20,21} In contrast, using health outcomes as a metric of value is seen by other health policy experts as being potentially problematic because severity of illness and social challenges that affect health—an especially important issue at safety-net hospitals—might not be fully captured in the risk-adjustment models.¹²

Using metrics of patient experience, although potentially valuable, could also be regarded as problematic because they represent subjective attitudes that may vary according to patient demographics and may not always reflect the quality of care that the patient receives. Our finding that safety-net hospitals had a worse VBP average process score yet had a comparable VBP average survival score and a better average actual mortality rate relative to other hospitals aligns with the growing body of research that suggests that process scores do not always predict health outcomes. It also suggests that safety-net hospitals might fare better under VBP if the mortality score were weighted even more heavily.

The financial impact of VBP on hospitals in 2014 is likely to be small. However, concerns that VBP will affect the financial condition of safety-net hospitals are appropriate. Safety-net hospitals are more likely than other hospitals to have a negative or otherwise low operating margin, implying the potential for even small adjustments in payments to affect these hospitals and the care rendered to low-income patients.

Furthermore, safety-net hospitals are much more likely than others to benefit from Medicare uncompensated care payments, which highlights the potential for the impact of VBP on safety-net hospitals to be compounded by imminent reductions in those payments under the ACA. That safety-net hospitals are at greater risk than other hospitals of losing money under the HRRP in addition to VBP—and that both programs will affect larger shares of base Medicare operating payments over time—further justifies concern over how safety-net hospitals are being affected by these programs.

While Medicare is leading the way on VBP, it is important to recognize that commercial plans

and state Medicaid programs and Children's Health Insurance Programs are increasingly considering their own forms of VBP and that hospitals will be adapting to changes in reimbursement policies related to VBP under Medicare as well as some state Medicaid programs. Policy makers should monitor how combined federal and state policies are affecting health outcomes and hospital finances, especially among hospitals serving vulnerable populations. An area of particular concern is the coordination of reductions in DSH payments, which are critical to the financial viability of safety-net hospitals that serve large shares of Medicaid and Medicare-Medicaid dually eligible patients. Monitoring both the effects and coordination of these policies would help ensure continued access to safety-net hospitals that provide health outcomes comparable to those provided by other hospitals.

More broadly, policy makers should consider two concerns regarding the performance and financing of safety-net hospitals. First, they should continue to assess the emerging research on whether the VBP programs are improving quality or simply improving the cost side of the "value equation." One recent study found that VBP has not yet had a meaningful impact on hospital care.²² While the need to bend the cost curve is obvious, there remains a need to review and evaluate policy that puts the safety net at risk, since our work and the work of others suggests similar performance on outcomes.²³

Second, and of looming importance to safety-net hospitals, is the issue of Medicaid expansion.²⁴ To date, twenty-one states have not expanded Medicaid as outlined under the ACA. While safety-net hospitals in states that are expanding will experience reduced uncompensated care burdens and increased Medicaid revenues, the scheduled reductions in Medicaid DSH payments will likely prove even more financially problematic for safety-net hospitals in non-Medicaid-expanding states. Both the VBP impact on actual quality and the lack of state Medicaid expansion deserve continued monitoring and assessment of their impacts on safety-net hospitals and their patients.

Conclusion

Safety-net hospitals are more likely than other hospitals to fare poorly under VBP because of their worse performance on the two elements that currently are assigned the greatest weight in the VBP program: process-of-care and patient experience scores. However, the new inclusion of mortality scores in determining VBP adjustments is unlikely to further disadvantage safety-net hospitals. Additional research on the impact

on safety-net hospitals of upcoming changes scheduled to take place within the VBP program—such as the inclusion of cost-efficiency measures—would be valuable, just as it would be valuable to examine the impact of VBP on the quality of hospital care. ■

The work reported on in this article was partially supported by a grant from the Patient-Centered Outcomes Research Institute (PCORI) Pilot Project Program

Award (Grant No. 11P2PI000167-01; principal investigator: Edmund Becker). All statements in this article, including its findings and conclusions, are solely

those of the authors and do not necessarily represent the views of PCORI, its board of governors, or its methodology committee.

NOTES

- 1 Centers for Medicare and Medicaid Services. Hospital value-based purchasing [Internet]. Baltimore (MD): CMS; 2013 Aug 9 [cited 2015 Jan 26]. Available from: <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/hospital-value-based-purchasing/index.html?redirect=/hospital-value-based-purchasing>
- 2 Centers for Medicare and Medicaid Services. Hospital value-based purchasing program [Internet]. Baltimore (MD): CMS; 2013 Mar [cited 2015 Jan 26]. Available from: http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/Hospital_VB_Purchasing_Fact_Sheet_ICN907664.pdf
- 3 Rau J. Medicare discloses hospitals' bonuses, penalties based on quality. Kaiser Health News [serial on the Internet]. 2012 Dec 20 [cited 2015 Jan 26]. Available from: <http://www.kaiserhealthnews.org/stories/2012/december/21/medicare-hospitals-value-based-purchasing.aspx>
- 4 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(16):1204–10.
- 5 Neuhausen K, Katz MH. Patient satisfaction and safety-net hospitals: carrots, not sticks, are a better approach. *Arch Intern Med.* 2012;172(16):1202–3.
- 6 Gilman M, Adams EK, Hockenberry JM, Wilson IB, Millstein AS, Becker ER. California safety-net hospitals likely to be penalized by ACA value, readmission, and meaningful-use programs. *Health Aff (Millwood).* 2014;33(8):1314–22.
- 7 Goldman LE, Vittinghoff E, Dudley RA. Quality of care in hospitals with a high percent of Medicaid patients. *Med Care.* 2007;45(6):579–83.
- 8 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(12):1233–9.
- 9 Jha AK, Orav EJ, Li Z, Epstein AM. Concentration and quality of hospitals that care for elderly black patients. *Arch Intern Med.* 2007;167(11):1177–82.
- 10 Anderson GF, Frogner BK. Health spending in OECD countries: obtaining value per dollar. *Health Aff (Millwood).* 2008;27(6):1718–27.
- 11 Centers for Medicare and Medicaid Services. Recovery auditing in Medicare and Medicaid for fiscal year 2012: FY 2012 report to Congress as required by section 1893(h) of the Social Security Act and section 6411(c) of the Affordable Care Act [Internet]. Baltimore (MD): CMS; 2012 [cited 2015 Jan 26]. Available from: http://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/Medicare-FFS-Compliance-Programs/Recovery-Audit-Program/Downloads/Report-To-Congress-Recovery-Auditing-in-Medicare-and-Medicaid-for-Fiscal-Year-2012_013114.pdf
- 12 Berenson J, Shih A. Higher readmissions at safety-net hospitals and potential policy solutions. Issue Brief (Commonw Fund). 2012;34:1–16.
- 13 Centers for Medicare and Medicaid Services. Readmissions Reduction Program [Internet]. Baltimore (MD): CMS; 2014 Aug 4 [cited 2015 Jan 26]. Available from: <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html>
- 14 Joynt KE, Jha AK. Characteristics of hospitals receiving penalties under the Hospital Readmissions Reduction Program. *JAMA.* 2013;309(4):342–3.
- 15 Robert Wood Johnson Foundation. How does Medicare value-based purchasing work? [Internet]. Princeton (NJ): RWJF; 2012 Jun [cited 2015 Jan 26]. Available from: http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2012/rwjf73146
- 16 Rau J. Methodology: how value based purchasing payments are calculated. Kaiser Health News [serial on the Internet]. 2013 Nov 14 [cited 2015 Jan 26]. Available from: <http://kaiserhealthnews.org/news/value-based-purchasing-medicare-methodology/>
- 17 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(5):590–605.
- 18 Jha AK, DesRoches CM, Shields AE, Miralles PD, Zheng J, Rosenbaum S, et al. Evidence of an emerging digital divide among hospitals that care for the poor. *Health Aff (Millwood).* 2009;28(6):w1160–70. DOI: 10.1377/hlthaff.28.6.w1160.
- 19 Jha AK. Measuring hospital quality: what physicians do? How patients fare? Or both? *JAMA.* 2006;296(1):95–7.
- 20 Berenson RA, Pronovost PJ, Krumholz HM. Achieving the potential of health care performance measures: timely analysis of immediate health policy issues [Internet]. Princeton (NJ): Robert Wood Johnson Foundation; 2013 May [cited 2015 Jan 26]. Available from: <http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf406195>
- 21 Hackbarth GM. MedPAC letter to CMS RE: file code CMS-3239-P [Internet]. Baltimore (MD): CMS; 2011 Mar 4 [cited 2015 Jan 26]. Available from: <http://thehill.com/images/stories/blogs/medpacvbbp.pdf>
- 22 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.* 2014 Jul 15. [Epub ahead of print].
- 23 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(8):1739–48.
- 24 Neuhausen K, Spivey M, Kellerman AL. State politics and the fate of the safety net. *N Engl J Med.* 2013;369(18):1675–7.