HAC REDUCTION PROGRAM PENALTIES: AN UNDUE BURDEN ON ESSENTIAL HOSPITALS?

Authored by:
Brian Roberson, MPA
Katie Reid, MPH

KEY FINDINGS

- The Hospital Acquired Conditions Reduction Program creates financial incentives for hospitals to reduce hospital-acquired infections, injuries, and other adverse events.
- The program's application of penalties to certain add-on payments could compound resource shortages at essential hospitals.
- Previous findings show a similar impact by other incentive-based programs, such as the Value Based Purchasing and Hospital Readmissions Reduction programs.
- Hospitals with more than 400 beds, teaching hospitals, those treating highly complex patients, and essential hospitals are more likely to receive penalties.
- There is no evidence penalties aligned with outcomes at these hospitals.

INCENTIVE-BASED QUALITY IMPROVEMENT IN MEDICARE

Many key policy changes in the Affordable Care Act (ACA) focus on improving the quality of care delivered by the nation's health care system. Since the ACA's enactment in March 2010, the Centers for Medicare & Medicaid Services (CMS) has administered three programs designed to improve the quality and value of hospital care through financial rewards and penalties: the Value-Based Purchasing (VBP) Program, the Hospital Readmissions Reduction Program (HRRP), and the Hospital Acquired Conditions (HAC) Reduction Program.

Each of these incentive-based programs compares hospital performance against national benchmarks. The VBP Program creates a performance-based payment model by rewarding high-performers with an incentive payment funded by penalties assessed to low-performers in the program. Over time, the VBP Program will include additional measures and the percentage of Medicare payments it puts at risk will increase from 1 percent in fiscal year FY) 2013 to 2 percent by FY 2017.[1]

HRRP seeks to reduce the number of avoidable readmissions. The program penalizes hospitals for an excess of readmissions that occur within 30 days of index admissions. CMS will increase HRRP penalties to 3 percent in FY 2015, from 2 percent in FY 2014 and 1 percent in FY 2013. Initial applicable conditions included acute myocardial infarction (AMI), heart failure (HF), and pneumonia in fiscal years 2013 and 2014, and will be expanded to include chronic obstructive pulmonary disease (COPD), total hip arthroplasty (THA), and total knee arthroplasty (TKA).[2]

The HAC Reduction Program creates financial incentives for hospitals to reduce hospital-acquired infections, injuries, and other adverse events. The Centers for Disease Control and Prevention (CDC) has estimated that

Research Methods

Building on previous research on the distribution of incentives in Affordable Care Act quality improvement programs, this analysis investigates whether the Hospital Acquired Conditions Reduction Program disproportionately penalizes certain types of hospitals. We also compared 30-day mortality rates to discover relationships between penalties and outcomes.

In this cross-sectional study, we employed chi-square analysis to examine bivariate relationships between program penalties and size, teaching status, patient acuity, and essential hospital status for a national sample of 3,263 hospitals. T-tests were then used to investigate differences between mortality rates in penalized and nonpenalized hospitals.

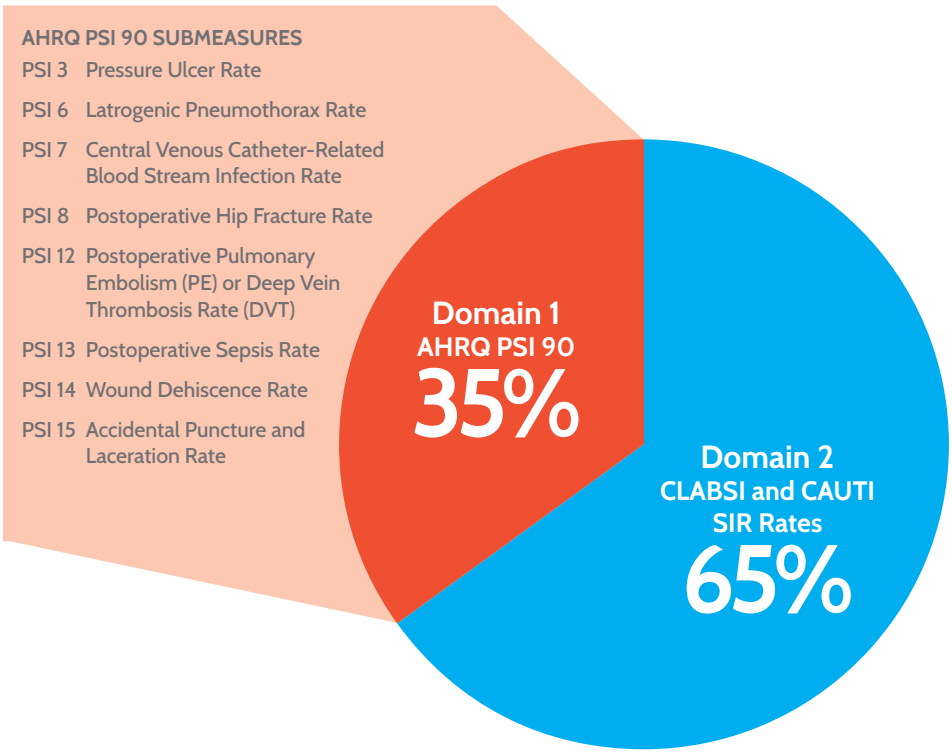
HACs are responsible for 99,000 deaths and up to $33 billion in health care costs nationally each year.[3] For FY 2015, which started October 1, 2014, CMS will penalize hospitals that perform poorly on a subset of HAC measures (Figure 1) that will include standardized infection ratios (SIRs) for central line-associated blood stream infection (CLABSI) and catheter-associated urinary tract infection (CAUTI), as well as Agency for Healthcare Research and Quality (AHRQ) patient safety indicator 90 (PSI 90), a composite measure that comprises eight submeasures (Figure 1).

HAC PROGRAM RAISES POLICY CONCERNS

Under the HAC Reduction Program, the poorest performing 25 percent of the nation's hospitals will sustain penalties equal to 1 percent of their total Medicare inpatient payments. Unlike the VBP and HRRP programs, which apply penalties only to base inpatient payments, HAC Reduction Program penalties will apply to add-on payments, such as disproportionate share hospital (DSH) and indirect medical education (IME) payments. DSH payments compensate hospitals for costs associated with caring for low-income patients, who, on average, are sicker and use more hospital resources at a higher cost than other patients.[4] IME payments are funds intended to offset the added costs of operating a teaching hospital.[5]

Putting DSH and IME payments at risk for HAC Reduction Program penalties raises serious questions for essential hospitals—those that care for large volumes of uninsured and other vulnerable patients and that often serve as academic medical centers and teaching hospitals: Are they more likely to face penalties, and will penalties be disproportionately larger as a percentage of income than for other types of hospitals?

FIGURE 1: BREAKDOWN OF HAC REDUCTION PROGRAM DOMAIN WEIGHTING



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The inclusion of these additional penalties into the HAC Reduction Program has the potential to compound resource shortages at these essential hospitals, which already typically operate with negative or near-negative margins, creating a feedback loop of inadequate resources for improvement.[6, 7] In light of these concerns, the HAC Reduction Program has come under scrutiny for including measures that have already been included in the VBP Program and for its arbitrary penalization of 25 percent of hospitals without regard for quality improvement nationwide. Further, many policy experts and hospital leaders argue that the program is not founded in adequately reliable measures that successfully differentiate high and low performers, leading to bias against larger hospitals, teaching hospitals, and those that treat more complex patients.[8, 9, 10] These biases, they contend, could lead to increased disparities in care for patients who rely on essential hospitals.

Further debate surrounding the HAC Reduction Program centers on the outcomes measures included within the program, particularly the PSI 90 composite measure. As administratively derived data that is not clinically validated, its utility for comparisons between hospitals has been questioned due to the influence of coding differences among organizations.[11] Also included in PSI 90 are measures of pressure ulcer rates and accidental puncture, measures that have been linked to patients' socioeconomic status and complexity.[12, 13]

Further debate surrounding the HAC Reduction Program centers on the outcomes measures included within the program, particularly the PSI 90 composite measure.

A recent study by Gilman et al.[14], published in the August 2014 edition of *Health Affairs*, examined the likelihood of essential hospitals in California incurring disproportionate penalties under the VBP and HRRP programs. The study also looked at differences in 30-day mortality rates as measures of differences in the quality of care between those hospitals and hospitals that do not fill a safety net role. Findings showed that essential hospitals had lower 30–day risk-adjusted mortality rates for AMI, HF, and pneumonia than non-safety net hospitals, yet were **more** likely than those other hospitals to be penalized under both the VBP and HRRP programs.

Building upon the research of Gilman et al., this analysis investigates whether certain types of hospitals nationally would be disproportionately penalized by the HAC Reduction Program. Specifically, we seek to determine the likelihood that hospitals having 400 or more beds, teaching hospitals, those that serve complex patients, and essential hospitals will receive penalties. By comparing this likelihood against mortality rates as a direct measure of health outcomes, we can further investigate whether such penalties are justified as indicators of poor quality performance.

METHODS BEHIND THIS STUDY

Data from four sources were used in the course of this analysis: data released as part of CMS' fiscal years 2014 and 2015 inpatient prospective payment system (IPPS) proposed rules, including the FY 2014 impact file; the American Hospital Association (AHA) Annual Survey of Members for FY 2012; and the CMS Hospital Compare July 2014 release. We gathered CMS-estimated HAC Reduction Program scores from the FY 2015 IPPS proposed rule; information on bed size and Council of Teaching Hospitals (COTH) affiliation from the FY 2012 AHA survey; and DSH patient percentages and transfer-adjusted case mix indices from the FY 2014 impact file.

For the purpose of this analysis, we categorized essential hospitals as those with a DSH patient percentage in the top quartile of the sample. Hospitals in the top quartile of case mix indices were designated as treating patients with high-acuity conditions. This allowed us to examine bivariate relationships between program penalties and size, teaching status, patient acuity, and essential hospital status for a national sample of 3,263 hospitals. We used Pearson chi-square tests to reveal any statistically significant differences in the proportion of hospitals estimated to receive penalties in each test group. This test compares the observed proportion of penalized hospitals with the expected proportion, given a null relationship between being a member of a particular group and receiving HAC Reduction Program penalties.

As a secondary goal of our analysis, we sought to determine whether any disparities in penalties under the HAC Reduction Program could be explained by disparities in health care outcomes at penalized hospitals. We used mortality rates from CMS Hospital Compare as our primary outcomes indicator. Outcomes data were available for 2,385 of our original sample of 3,263 hospitals. T-tests were used to test for significant differences in group means within each test group. A T-test measures the difference between two means and determines the likelihood that mere chance caused the difference.

All p-values for statistical tests were two tailed and alpha was set at 0.01. Analyses were performed using the SAS statistical package version 9.4.

RESULTS: DISPROPORTIONATE PENALTIES ON ESSENTIAL HOSPITALS

Of the 3,263 hospitals in our sample, 743 were estimated to be penalized under the HAC Reduction Program with a 1 percent reduction in CMS hospital payments. Penalties are mandated to be applied to the worst-performing 25 percent of hospitals nationally. However, we found that 38.2 percent of hospitals with more than 400 beds were estimated to be penalized, compared with 20.33 percent of hospitals with fewer beds. Teaching hospitals, defined in our analysis as being a member of the COTH, faced penalties at a rate of 54.47 percent, while only 20.19 percent of non-teaching hospitals faced penalties. Both of these findings represent statistically significant differences.

Essential hospitals were nearly 8 percentage points more likely to be penalized than those that do not care for large volumes of vulnerable patients.

In addition, we found that patient acuity and status as an essential hospital were associated with a higher proportion of penalties. Those that treated patients with an average higher acuity, were more than 10 percentage points more likely to be penalized than those with a lower average patient acuity. Essential hospitals were nearly

TABLE 1 PENALIZATION PROPORTIONS AMONG TEST GROUPS

	PENALIZED	P-VALUE
> 400 Beds	38.20%	<0.01
≤ 400 Beds	20.33%	
Teaching	54.47%	<0.01
Non-Teaching	20.19%	
High DSH Patient Percentage	28.68%	<0.01
Low DSH Patient Percentage	20.80%	
High Patient Acuity	30.88%	<0.01
Low Patient Acuity	20.07%	

8 percentage points more likely to be penalized than those that do not care for large volumes of vulnerable patients (Table 1).

Examining the mortality rates of our four test groups revealed that hospitals estimated to receive penalties under the HAC Reduction Program have rates that are either not significantly different or that are significantly lower than their test group comparisons (Table 2). Notably, teaching hospitals had the lowest mortality rates across all three conditions, despite being more than twice as likely to face penalties.

Similarly, larger hospitals averaged 0.497 percent lower mortality rates than hospitals with 400 or fewer beds. Hospitals that treated patients with a higher average acuity also reported lower mortality rates in all three measured conditions. We found that being an essential hospital—a hospital that cares for all patients, regardless of their socioeconomic status—was not associated with a significant difference in mortality rates for AMI or pneumonia. But these hospitals did have significantly lower mortality rates for HF patients. None of the data indicated that poorer-quality performance in mortality rates is associated with an increased likelihood of penalization under the HAC Reduction Program.

To further investigate any relationship between program penalties and mortality rates, we tested for differences between penalized and non-penalized hospitals within each of our test groups. This analysis yielded no statistically significant differences on any measure for any of the test groups (Table 3 on page 5). Based on the results of our analysis, higher mortality rates were not found to be associated with estimated penalties under the HAC Reduction Program.

FAMILIAR CONCERNS SURROUND HAC REDUCTION PROGRAM

Our analysis builds upon recent research that suggests essential hospitals are more likely to perform poorly on the measures included in the VBP and HRRP programs and that these hospitals are more likely to receive penalties, despite having similar or better 30-day mortality rates and lower per-patient costs.[15]

Additionally, a study by Yale University School of Medicine found that even when one compares outcomes measures of essential hospitals and other types of hospitals within the same metropolitan area, the differences in performance are less than 1 percent in any single measure.[16]

TABLE 2 MORTALITY RATES AMONG TEST GROUPS

MORTALITY RATES	>400 BEDS	≤ 400 BEDS	P-VALUE	HIGH DSH PATIENT %	LOW DSH PATIENT %	P-VALUE	TEACHING	NON-TEACHING	P-VALUE	HIGH PATIENT ACUITY	LOW PATIENT ACUITY	P-VALUE
n	435	1,950		603	1,782		233	2,152		602	1,783	
AMI	14.80	15.20	<0.01	15.23	15.10	0.056	14.56	15.19	<0.01	14.81	15.24	<0.01
HF	11.20	11.81	<0.01	11.28	11.84	<0.01	11.00	11.78	<0.01	11.48	11.77	<0.01
Pneumonia	11.47	11.95	<0.01	11.86	11.87	0.923	11.22	11.93	<0.01	11.61	11.95	<0.01

Systematic biases against certain categories of hospitals may serve to increase socioeconomic disparities in care delivery.

Our own analysis found similar results when examining penalties assessed by the HAC Reduction Program. We found that even though mortality rates among essential hospitals were either lower or not statistically different than those of other hospitals, they were nearly 8 percentage points more likely to be penalized under the HAC program. This calls into question the ability of these programs to measure true differences in the quality of care essential hospitals deliver.

Additionally, we found that teaching hospitals, hospitals with more than 400 beds, and hospitals treating patients with high-acuity conditions are significantly more likely to be penalized than other institutions. Systematic biases against certain categories of hospitals may serve to increase socioeconomic disparities in care delivery. At risk are hospitals with chronic resource constraints and average margins that often are lower than 2 percent.[17] Accumulated financial penalties assessed under ACA quality initiatives, combined with other payment cuts from the ACA, likely will limit the ability of these essential hospitals to conduct quality improvement activities, potentially leading to lower baseline performance measures and slower improvement on quality measures.[18] More concerning might be that as penalties are applied to a larger portion of these hospitals' income, the resulting financial stress could lead hospitals to discontinue or limit services, which, in turn, could limit access to care for the vulnerable populations they serve.

STUDY LIMITATIONS TO CONSIDER

Research on the impact of ACA quality programs is still in the early stages and data collection methods are not as robust as we would like. As a result, our study has two main limitations. Outcomes data for the entire sample of hospitals eligible for the HAC Reduction Program are not available due to volume requirements for hospital reporting of these measures. We chose not to limit our penalty data to this smaller sample to provide the broadest possible examination of the penalty probabilities for our test groups. This creates the possibility that these low-volume hospitals are under-represented in our sample. However, we believe the effect of these missing outcomes measures would be minimal due to the low volume of these hospitals.

Second, due to the timing of this study, we were forced to rely on estimates of penalties in our analysis rather than actual assessed penalties. The accuracy of our analysis is limited to the accuracy of these estimates.

CONCLUSION

As these programs mature, policymakers and researchers should give careful consideration to inequalities in the application of penalties in all such improvement programs—and in the HAC Reduction Program in particular. Additional consideration should be given to the unique needs of vulnerable patients and the essential hospitals that care for them. Further research is needed to more fully examine the links between patient complexity and socioeconomic status and the various measures the HAC Reduction Program covers.

TABLE 3 MORTALITY RATES BY PENALTY

		ACUTE MYOCARDIAL INFARCTION			HEART FAILURE			PNEUMONIA		
		Penalized	Non-Penalized	P-Value	Penalized	Non-Penalized	P-Value	Penalized	Non-Penalized	P-Value
Bed Size	>400	14.77	14.85	0.418	10.97	11.34	0.024	11.42	11.49	0.695
	≤ 400	15.18	15.21	0.683	11.87	11.79	0.405	11.92	11.96	0.696
Teaching Status	Yes	14.66	14.44	0.311	10.88	11.13	0.263	11.28	11.16	0.595
	No	15.15	15.20	0.528	11.82	11.76	0.557	11.92	11.94	0.838
DSH	High	15.15	15.26	0.384	11.28	11.28	0.990	11.89	11.84	0.816
	Low	15.00	15.12	0.131	11.77	11.86	0.320	11.73	11.90	0.074
Case Mix Index	High	14.75	14.85	0.492	11.38	11.53	0.320	11.59	11.62	0.865
	Low	15.21	15.24	0.743	11.74	11.78	0.700	11.89	11.97	0.476

Notes

1. QualityNet. Payments: Hospital Value-Based Purchasing (HVBP). https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1228772479353. Accessed November 2014.

2. Centers for Medicare & Medicaid Services. Readmissions Reduction Program. August 4, 2014. http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html. Accessed November 2014.

3. Scott RD. The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention. March 2009. http://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf. Accessed November 2014.

4. Davis PA, Hahn J, Morgan PC, et al. Medicare Provisions in the PPACA. Congressional Research Service. April 23, 2010. http://www.ncsl.org/documents/health/mcprov.pdf. Accessed November 2014.

5. Centers for Medicare & Medicaid Services. Fact Sheets: CMS Final Rule to Improve Quality of Care During Hospital Inpatient Stays. http://www.cms.gov/newsroom/mediareleasedatabase/fact-sheets/2013-fact-sheets-items/2013-08-02-3.html. Accessed November 2014.

6. Reid K, Roberson B, Laycox S, Linson M. *Essential Hospitals Vital Data: Results of America's Essential Hospitals' Annual Hospital Characteristics Survey, FY 2012*. America's Essential Hospitals. July 2014. http://essentialhospitals.org/wp-content/uploads/2014/08/VitalData-FullReport-20140804.pdf. Accessed November 2014.

7. Werner RM, Goldman EG, Dudley RA. Comparison of Change in Quality of Care between Safety-Net and Non-Safety-Net Hospitals. *The Journal of the American Medical Association*. 2008; 299(18): 2180-2187.

8. Letter to Marilyn Tavenner, administrator, Centers for Medicare & Medicaid Services, from the American Hospital Association, June 26, 2013. http://www.aha.org/advocacy-issues/letter/2014/140626-cl-1607-p-ipps.pdf. Accessed November 2014.

9. Letter to Marilyn Tavenner, administrator, Centers for Medicare & Medicaid Services, from the Association of American Medical Colleges, June 25, 2013. https://www.aamc.org/download/346874/data/aamccommentsonippsfy2014proposedrule.pdf. Accessed November 2014.

10. Letter to Marilyn Tavenner, administrator, Centers for Medicare & Medicaid Services, from America's Essential Hospitals, June 25, 2013. http://2c4xez132caw2w3cpr1il98fssf.wpengine.netdna-cdn.com/wp-content/uploads/2013/11/FINAL-FY2014-IPPS-Comment-Letter.pdf. Accessed November 2014.

11. Romano PS, Schembri ME, Rainwater JA. Can Administrative Data Be Used to Ascertain Clinically Significant Postoperative Complications? *American Journal of Medical Quality*. 2002;17(4):145-54.

12. Saunders LL, Krause JS, Peters BA, et al. The Relationship of Pressure Ulcers, Race, and Socioeconomic Conditions after Spinal Cord Injury. *Journal of Spinal Cord Medicine*. 2010; 33(4): 387-395.

13. Kin C, Snyder K, Kiran RP, et al. Accidental Puncture or Laceration in Colorectal Surgery: A Quality Indicator or a Complexity Measure? *Diseases of the Colon and Rectum*. 2013; 56(2):219-25. doi: 10.1097/DCR.0b013e3182765c43.

14. Gilman M. Adams EK, Hockenberry JM, et al. California Safety-Net Hospitals Likely To Be Penalized By ACA Value, Readmission, and Meaningful-Use Programs. *Health Affairs*. 2014; 33(8): 1314-1322.

15. Ibid.

16. Ross JS, Bernheim SM, Lin Z, et al. Based on Key Measures, Care Quality for Medicare Enrollees at Safety-Net and Non-Safety-Net Hospitals Was Almost Equal. *Health Affairs*. 2012; 31(8): 1739-1748.

17. Regenstein M, Huang J. Stresses to the Safety Net: The Public Hospital Perspective. Kaiser Family Foundation. May 30, 2005.

18. Werner RM, Goldman EG, Dudley RA. Comparison of Change in Quality of Care between Safety-Net and Non-Safety-Net Hospitals. *The Journal of the American Medical Association*. 2008; 299(18): 2180-2187.