



# In the Literature

## THE INVERSE RELATIONSHIP BETWEEN MORTALITY RATES AND PERFORMANCE IN THE HOSPITAL QUALITY ALLIANCE MEASURES

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If the lowest-performing U.S. hospitals performed as well as top-performers on specific quality measures, 2,200 fewer Americans would die each year, find researchers in a new study published in the July/August issue of *Health Affairs*.

For their study, "[The Inverse Relationship Between Mortality Rates and Performance in the Hospital Quality Alliance Measures](#)," researchers at the Harvard School of Public Health and Brigham and Women's Hospital examined the relationship between hospitals' performance on Hospital Quality Alliance (HQA) indicators and mortality rates. "[W]e found that high performance on the HQA was associated with 7 percent to 15 percent lower odds of death for each of three clinical conditions," says lead author Ashish K. Jha, M.D., M.P.H.

### About the Hospital Quality Alliance

HQA is a national public-private collaboration to encourage hospitals to voluntarily collect and report hospital quality performance information. Based on provisions in the Medicare Modernization Act of 2003, the U.S. Department of Health and Human Services instituted a program to collect HQA data on three common medical conditions—acute myocardial infarction (AMI), congestive heart failure (CHF), and pneumonia. Hospitals that do not provide data may have a portion of their Medicare fees withheld. As of December 2006, more than 4,300 hospitals had reported in to the program.

The researchers used data from 3,720 hospitals for care provided from April 2004 to March 2005. They looked at 10 quality-of-

care indicators related to treatment of AMI (aspirin and beta blocker at patient's arrival and discharge, ACE inhibitor); CHF (left ventricular function assessment, ACE inhibitor); and pneumonia (antibiotic timing, vaccination, oxygenation assessment). For each condition, the researchers created a summary score based on the weighted average of all measures. To analyze the relationship between HQA scores and death, they then linked the data to Medicare records on mortality.

### Higher Scores, Lower Mortality

"Higher performance was consistently associated with lower mortality rates," say the researchers. Hospitals in the bottom quartile of HQA performance had a mortality rate of 10.8 percent for AMI, 5.0 percent for CHF, and 7.9 percent for pneumonia, while those in the top quartile had nearly 1 percentage point lower mortality among patients with AMI, 0.4 percentage point lower mortality among patients with CHF, and 0.8 percentage point lower mortality among patients with pneumonia.

In other words, patients discharged from the top quartile of hospitals in AMI performance had 11 percent lower odds of dying than did patients discharged from the bottom quartile, the researchers say. Similarly, patients admitted to hospitals in the top quartile of CHF performance had 7 percent lower odds of death, and those admitted to hospitals in the top quartile of pneumonia performance had 15 percent lower odds of death. These findings did not change significantly, the researchers note, even after controlling for hospital

characteristics, like teaching status, region, size, and urban/rural location.

**Conclusions**

While HQA has become the largest program for rating the quality of hospital care, until this study there had been scant evidence of any links between its measures and patient outcomes. “[O]ur findings—that higher performance on the AMI, CHF, and pneumonia HQA indicators was each associated with lower risk-adjusted mortality—provide important data that are likely to bolster the HQA’s impact,” say the authors. Furthermore, the strength and consistency of the associations suggest the measures identify hospitals that provide high-quality care beyond the specific parameters of HQA processes.

The three conditions assessed by the HQA constitute more than 15 percent of Medicare hospital medical and surgical admissions, say the researchers. Indeed, if patients in the lowest-quartile hospitals had the mortality rates of patients from hospitals in the highest quartile, approximately 2,200 deaths would have been avoided (474 for AMI, 627 for CHF, and 1,112 for pneumonia). “[I]t is clear that the United States has embarked on a continuing and expanding initiative to monitor the quality of hospital care,” the authors write. “Our findings underscore the potential of this effort for improving

quality of care and changing patient outcomes.” The authors add that the study provides further impetus for consumers to use published data on hospital quality in making decisions about where to go for their health care.

**Facts and Figures**

- Hospitals in the top quartile of performance had 11% lower mortality for acute myocardial infarction (AMI), 7% lower mortality for congestive heart failure, and 15% lower mortality for patients with pneumonia, compared with hospitals in the bottom quartile.
- The mortality benefit of being a patient in a top-quartile versus a bottom-quartile hospital is comparable to that of receiving a beta blocker after an AMI versus not receiving one.
- If hospitals in the bottom quartile had mortality rates comparable to those in the top quartile, 2,200 fewer Americans would die each year from the three conditions studied.

Adjusted Mortality Rates by Hospital Performance on HQA Summary Scores

HQA performance	Predicted mortality rate (95% confidence interval)		
	AMI	CHF	Pneumonia
First quartile	10.0%	4.6%	7.1%
Second quartile	10.2%	4.9%	7.4%
Third quartile	10.6%	5.0%	7.5%
Fourth quartile	10.8%	5.0%	7.9%

Notes: Adjusted for patient age, sex, race, and the presence or absence of each of 30 comorbidities, AMI = acute myocardial infarction, CHF = congestive heart failure.

Source: Adapted from A. K. Jha, E. J. Orav, Z. Li et al., “The Inverse Relationship Between Mortality Rates and Performance in the Hospital Quality Alliance Measures,” *Health Affairs*, July/August 2007 26(4):1104–10.