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Title: “America’s Best Hospitals” in the Treatment of Acute Myocardial Infarction

Specific Aims: The US News & World Report’s “America’s Best Hospitals” rankings for “Heart and Heart Surgery” is a popular hospital profiling system, but it is not known if ranked hospitals have lower risk-standardized, 30-day mortality rates (RSMR) for patients with acute myocardial infarction (AMI).

Hypothesis: Hospitals identified by the US News & World Report’s “America’s Best Hospitals” rankings for “Heart and Heart Surgery” do not uniformly have low RSMR for patients with AMI compared to non-ranked hospitals. The methodology used to generate rankings does not integrate all of the relevant information necessary to evaluate performance in mortality outcomes.

Methods Used: Using a hierarchical regression model based on 2003 Medicare administrative data, we calculated RSMR for ranked and non-ranked institutions in the treatment of AMI. We compared baseline characteristics of patients by hospital type using the chi-square test for categorical variables and analysis of variance for continuous variables. Observed in-hospital and 30-day mortality rates for patients with an AMI were calculated and compared between the 2 hospital groups. We used hierarchical generalized linear models (HGLM) to calculate hospital-specific, risk-standardized mortality rates (RSMR), accounting for patient characteristics and within- and between-hospital variances. Risk-standardized mortality rates, which essentially transform the mortality ratios to rates, were calculated for each hospital. We calculated standardized mortality ratios (SMR) for ranked hospitals. SMR greater than 1 indicates that the hospital had higher than expected mortality and less than 1 indicates lower than expected mortality. For each hospital, a bootstrapping model was used to produce 1,000 HGLM iterations to generate a 95% confidence interval (CI) of the standardized mortality ratio. We identified hospitals with a SMR significantly less than 1 (defined by a 95% CI with an upper limit less than 1) and then cross-classified hospitals by this new variable and whether US News & World Report “ranked” the hospital. We identified ranked and non-ranked hospitals with standardized mortality ratios (SMR) significantly less than the mean expected for all hospitals in the study. We then calculated the relative risk of having a significantly lower SMR for non-ranked hospitals compared with ranked hospitals.

Results: We compared 13,662 patients in 50 ranked hospitals with 254,907 patients in 3,813 non-ranked hospitals. The RSMR was lower in ranked compared with non-ranked hospitals (16.0 vs. 17.9%, p< 0.001). The RSMR range for ranked and non-ranked hospitals overlapped (11.4 to 20.0% and 13.1 to 23.3%, respectively). In a RSMR quartile distribution of all hospitals, 35 (70%) ranked hospitals were in the lowest (best) quartile, 11 (22%) were in the middle two quartiles, and 4 (8%) were in the highest quartile. Among ranked hospitals, 11 (22%) had a SMR significantly less than 1 compared with 28 (0.73%) non-ranked hospitals.

Conclusions: On average, admission to a ranked hospital for AMI was associated with a lower risk of 30-day mortality, although about one-third of the ranked hospitals fell outside the best performing quartile based on RSMR. While ranked hospitals were much more likely to have a SMR significantly less than 1, many more non-ranked hospitals had this distinction.