

### Readmission Rates After Passage of the Hospital Readmissions Reduction Program: A Pre-Post Analysis

#### Take Away Points

- Hospital-specific risk-standardized readmission rates (RSRRs) have improved over time after passage of the law, i.e., ACA, after control for any prelaw preexisting secular trends
- The increase in the rate of reduction in hospital RSRRs (postlaw vs. prelaw period) was greater for hospitals with lower performance than for those with higher performance

#### The Issue

The Affordable Care Act (ACA) created the Medicare Hospital Readmissions Reduction Program (HRRP), which introduced the prospect of financially penalizing hospitals based on their previous performance in target conditions, with the goal of encouraging health care organizations to enhance safety and value. Medicare has reported lower readmission rates since passage of the ACA, however, it has been questioned whether the lowest-performing hospitals might experience less rapid improvement due to being under-resourced or serving vulnerable populations. This study sought to confirm that hospital readmission rates decreased after ACA compared with any preexisting trends in improvement before passage of the law, and whether the acceleration of improvement in readmission rates after ACA was greater in the lowest-performing hospitals than in higher-performing hospitals.

#### Source

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<http://annals.org/aim/article/2594952/readmission-rates-after-passage-hospital-readmissions-reduction-program-pre-post>

#### Study Methods and Design

The study used MedPAR file to identify Medicare fee-for-service beneficiaries aged 65 or older who were discharged alive after hospitalization for acute myocardial infarction (AMI), congestive heart failure (CHF), or pneumonia, from January 1, 2000 through November 30, 2013. Patient demographic information included age, sex and major comorbidities. Hospital characteristics included teaching status, Joint Commission certification, geographic location, ownership, number of beds, mean age of admitted beneficiaries, percentage of admitted patient race/sex, median hospital volume, 30-day mortality and readmission rates, and percentage of admissions for dual-eligible. Hospital penalty information was obtained from CMS public available data for fiscal year 2013, the first year of the penalties. Hospitals were divided into 4 groups based on the size of the penalty: highest-performing (0% penalty), average-performing (>0% and <0.50%), low-performing ( $\geq 0.50\%$  and <0.99%), and lowest-performing ( $\geq 0.99\%$ ).

The primary outcomes were hospital-specific, 30-day, all-cause risk-standardized readmission rates (RSRRs) for patients discharged with AMI, CHF, or pneumonia. Using the CMS risk-standardized method, a hierarchical generalized linear model with a logit link function and hospital-specific random intercepts was fitted to model 30-day all-cause readmissions as a function of patients' age, sex, and comorbidities. Both the absolute proportion of readmitted patients and the rate of change in the RSRRs over time were reported as the number of readmissions per 10 000 discharges per year. To assess the effect of the law's passage, the study defined a prelaw period of 40 quarters before passage of the law (January 1, 2000 to

March 31, 2010) and a postlaw period of 15 quarters after passage of the law (April 1, 2010 to December 31, 2013).

The study specified and fitted a logistic regression to patient-level data to estimate the RSRRs for each quarter to test whether hospital-specific RSRRs have improved over time in the postlaw period, after control for any prelaw preexisting secular trends. Then a piecewise linear model was fitted with a change point placed at the time of passage of the ACA, with the estimated RSRRs as the dependent variable ("trend model"). For the trend models, generalized estimating equations with robust SEs and an autoregressive correlation structure were used. The study also included multiple sensitivity analyses including weighted by hospital volume, using different prelaw period, etc.

### **Key Findings**

- Compared with the highest-performing hospitals, those with the lowest performance served a greater percentage of black patients (13.1% vs. 7.3%;  $P < 0.001$ ), female patients (56.7% vs. 53.1%;  $P < 0.001$ ), and dual-eligible patients (26.1% vs. 17.0%;  $P < 0.001$ ). They also had higher all-cause readmission rates (17.2% vs. 13.3%;  $P < 0.001$ ); were more likely to be a major teaching hospital (11.2% vs. 6.1%;  $P < 0.001$ ); were less likely to be a private, not-for-profit hospital (61.6% vs. 70.6%;  $P < 0.001$ ); and were less likely to be in a rural setting (22.9% vs. 29.9%;  $P < 0.001$ ).
- Risk-standardized readmissions increased by an estimated 0.5 (95% CI, 0.3 to 0.7) per 10 000 discharges per year before passage of the law and decreased by 76.6 (CI, 76.1 to 77.1) per 10 000 discharges per year after passage of the law. These trends differed for hospitals in different performance groups.
  - During the prelaw period, risk-standardized readmissions decreased in the highest-performance group, remained stable in the average-performance group, increased in both low-performance and lowest-performance groups.
  - During the postlaw period, risk-standardized readmissions decreased in all four groups, with the lowest-performance group averted largest.
- Risk-standardized readmissions decreased by 23.7 prelaw and by 99.3 postlaw in AMI, increased by 5.1 prelaw and decreased by 84.7 postlaw in CHF, increased by 3.1 prelaw and decreased by 48.2 postlaw in pneumonia.
- For all 3 conditions, the number of averted readmissions was larger among lower-performance groups than higher-performance groups.

### **Limitations**

- The study results are subject to discrepancies due to inaccuracies of billing codes in claims data.
- It is not certain that decreases in readmission rates were due to actual improvements in quality, and whether these improved quality metrics will continue.
- This analysis was not able to detect the extent to which hospitals may have decreased inpatient readmissions by increasing observation.
- The analysis cannot distinguish between improvement caused by the magnitude of the penalty and improvement caused by changes in health status in different patient populations

### **Final Thoughts**

Though Medicare began publicly reporting readmission metrics in 2009, provider organizations improved readmission rates over and above the preexisting trend only after the financial penalty being tied to these metrics. This suggests that coupling performance metrics to financial incentives may have more substantial effects on performance than public reporting alone. The fact that lower-performing hospitals accelerated improvement more than higher-performing hospitals is likely multifactorial, and further assessment will be essential to sustaining improvement and reducing disparities in care.