

Supplementary Material*

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* This supplementary material was provided by the authors to give readers further details on their article. The material was reviewed but not copyedited.

Supplement Table 1. Comparison of the Readmission and EDAC Measures

	30-Day Readmission Measure	EDAC Measure
Encounters within 30-days of discharge	Unplanned readmissions	ED treat-and-discharge visits Observation Stays Unplanned readmissions
Measures	Readmission (yes vs. no)	Total days in (above) acute care settings
Risk Adjustment for hospital case mix	Yes	Yes
Includes repeat visits	No	Yes
Accounts for competing risk of death	No	Yes
Hospital-Level Calculation	Number of unplanned readmissions per 100 discharges (%)	Excess # of days in acute care (predicted minus expected) per 100 discharges
Interval Estimate	95% Confidence interval	95% Credible interval
Conditions	Heart failure Acute myocardial infarction Pneumonia COPD CABG THA/TKA	Heart failure Acute myocardial infarction Pneumonia

Supplement Table 2. Characteristics of Hospitals Participating in the Hospital Readmissions Reduction Program by Condition in Fiscal Year 2019

	Heart Failure (n=2,845)	Acute Myocardial Infarction (n=2,055)	Pneumonia (n=2,911)
Hospital size			
Small (<200 beds)	57.5	43.6	58.4
Medium (200-399 beds)	27.2	35.8	26.6
Large (>400 beds)	15.3	20.7	15.0
Ownership			
Public	13.9	9.7	14.7
Private for-profit	21.2	21.6	21.1
Private not-for-profit	64.9	68.7	64.2
Teaching status			
Non-teaching	40.0	37.9	48.7
Teaching	60.0	62.1	51.3
Safety-net status			
Non-safety-net	80.0	83.5	79.5
Safety-net	20.0	16.5	20.5
Location			
Non-Rural	74.5	85.8	73.8
Rural	25.5	14.2	26.2
U.S. Region			
Northeast	16.2	18.5	16.0
Midwest	24.2	23.8	23.9
South	41.2	38.4	41.3
West	18.4	19.2	18.9

Hospital characteristics (except safety-net status) were not available for 28 hospitals for heart failure, 17 hospitals for myocardial infarction, and 32 hospitals for pneumonia. Safety-net hospitals were defined as those in the highest quintile of total Medicare hospital stays for which patients were dually enrolled in Medicare and Medicaid.

Supplement Table 3. Change in Penalty Status using the Readmission vs. EDAC Measures for Heart Failure by Hospital Characteristics

	Penalized by neither measure	Penalized by EDAC, but not readmission measure	Penalized by readmission, but not EDAC measure	Penalized by both measures
No. of Hospitals	1041	382	387	1035
Hospital size				
Large (>400 beds)	12.6%	28.2%	1.8%	18.4%
Medium (200-399 beds)	24.1%	28.4%	16.8%	33.8%
Small (<200 beds)	63.3%	43.4%	81.4%	47.9%
Ownership				
Public	13.6%	15.5%	15.4%	13.0%
Private for-profit	15.6%	15.8%	26.4%	27.0%
Private not-for-profit	70.8%	68.7%	58.1%	60.1%
Teaching	49.6%	65.8%	36.1%	55.2%
Safety-Net	19.7%	20.7%	20.4%	19.8%
Rural	30.6%	17.1%	35.9%	19.4%
U.S. Region				
Northeast	12.8%	18.2%	11.5%	20.7%
Midwest	30.9%	19.5%	26.4%	18.3%
South	32.8%	40.5%	43.5%	49.0%
West	23.5%	21.8%	18.6%	12.0%

Supplement Table 4. Change in Penalty Status using the Readmission vs. EDAC Measures for Acute Myocardial Infarction by Hospital Characteristics

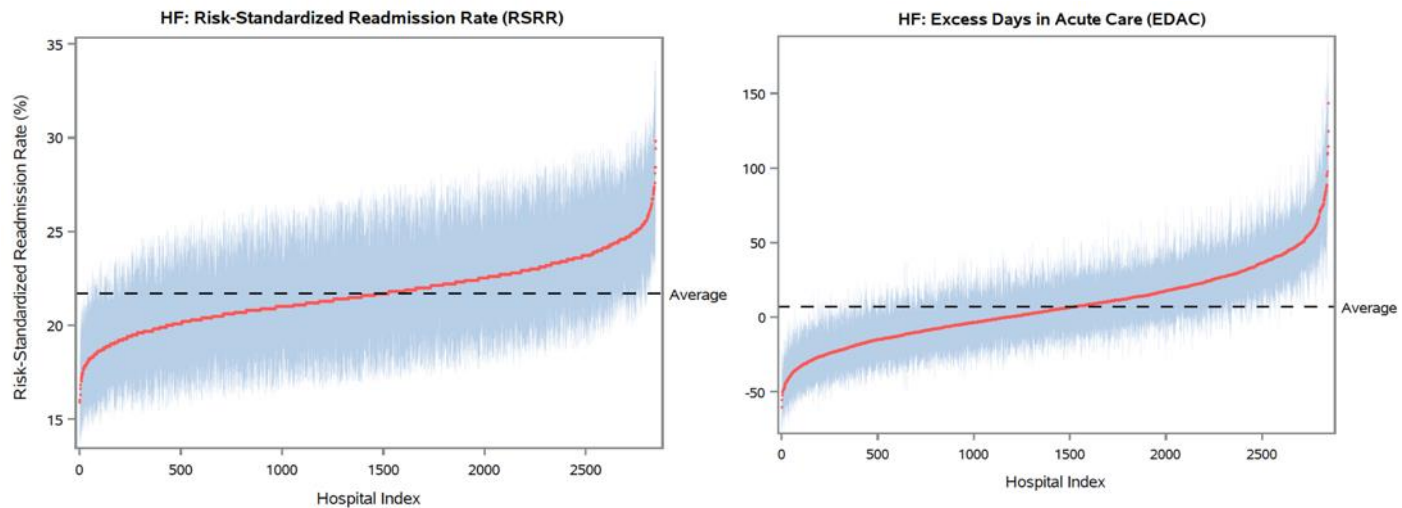
	Penalized by neither measure	Penalized by EDAC, but not readmission measure	Penalized by readmission, but not EDAC measure	Penalized by both measures
No. of Hospitals	740	289	292	734
Hospital size				
Large (>400 beds)	18.5%	27.9%	12.1%	23.5%
Medium (200-399 beds)	35.4%	32.1%	33.4%	38.5%
Small (<200 beds)	46.1%	40.1%	54.5%	38.0%
Ownership				
Public	9.6%	11.1%	8.6%	9.7%
Private for-profit	16.1%	21.6%	22.8%	26.7%
Private not-for-profit	74.2%	67.2%	68.6%	63.7%
Teaching	62.3%	61.3%	59.3%	63.3%
Safety-Net	16.2%	17.3%	17.5%	16.1%
Rural	17.1%	11.1%	18.3%	10.8%
U.S. Region				
Northeast	14.2%	20.9%	16.2%	22.9%
Midwest	29.3%	19.2%	25.9%	19.3%
South	29.2%	40.8%	41.7%	45.4%
West	27.3%	19.2%	16.2%	12.3%

Supplement Table 5. Change in Penalty Status using the Readmission vs. EDAC Measures for Pneumonia by Hospital Characteristics

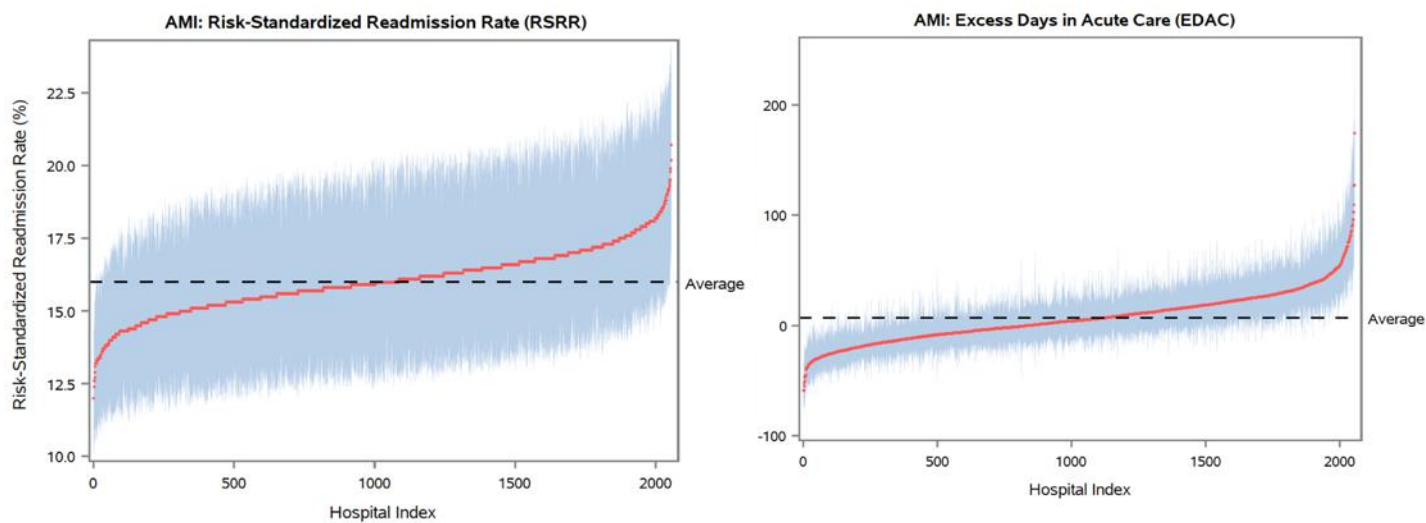
	Penalized by neither measure	Penalized by EDAC, but not readmission measure	Penalized by readmission, but not EDAC measure	Penalized by both measures
No. of Hospitals	1095	362	362	1092
Hospital size				
Large (>400 beds)	8.8%	26.8%	3.1%	21.2%
Medium (200-399 beds)	21.3%	26.5%	19.4%	34.3%
Small (<200 beds)	69.9%	46.6%	77.5%	44.5%
Ownership				
Public	16.4%	16.2%	14.9%	12.3%
Private for-profit	17.9%	17.9%	21.9%	25.2%
Private not-for-profit	65.7%	65.9%	63.2%	62.5%
Teaching	44.6%	59.2%	38.5%	59.6%
Safety-Net	20.2%	21.5%	21.5%	20.1%
Rural	34.3%	21.8%	35.4%	16.5%
U.S. Region				
Northeast	11.3%	17.3%	14.0%	21.0%
Midwest	27.9%	18.4%	25.8%	21.0%
South	35.8%	42.7%	42.7%	45.8%
West	25.1%	21.5%	17.4%	12.2%

Supplement Figure 1. Hospital Performance on the Readmission and Excess Days in Acute Care Measures by Condition

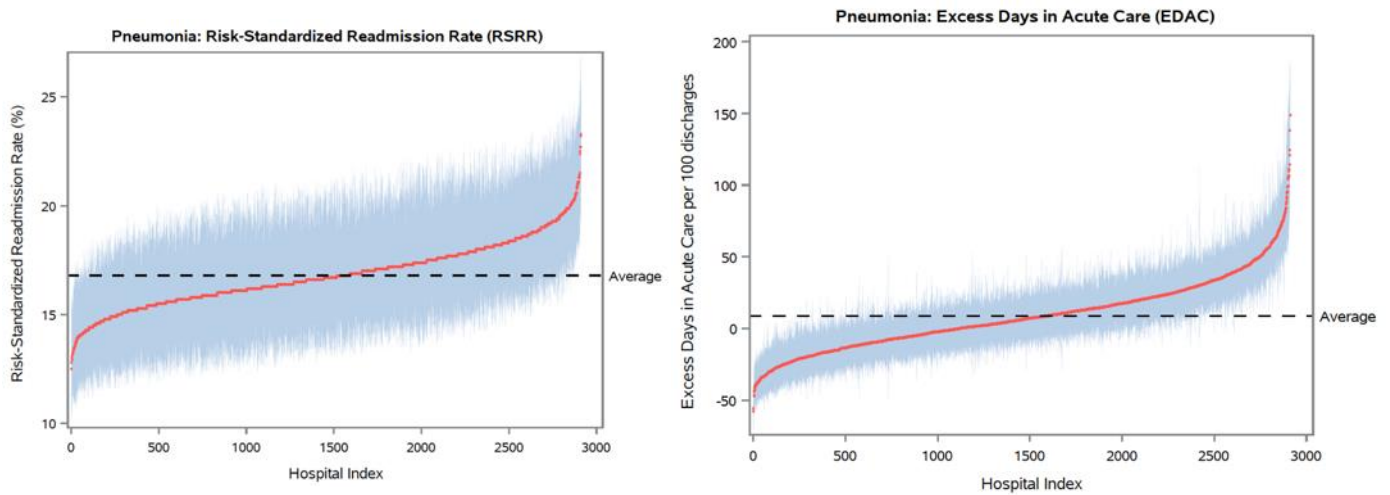
a. Heart Failure



b. Acute myocardial infarction



c. Pneumonia



On the left, Panels A-C show hospital-level point estimates (red) and 95% confidence intervals (blue) for the 30-day risk-standardized readmissions by condition. On the right, point estimates (red) and 95% credible intervals (blue) are shown for the excess days in acute care measure by condition. The dashed line (black) represents the national average for hospital performance on each respective measure.

Supplement Figure 2. Change in Penalty Status with the EDAC Measure under the HRRP

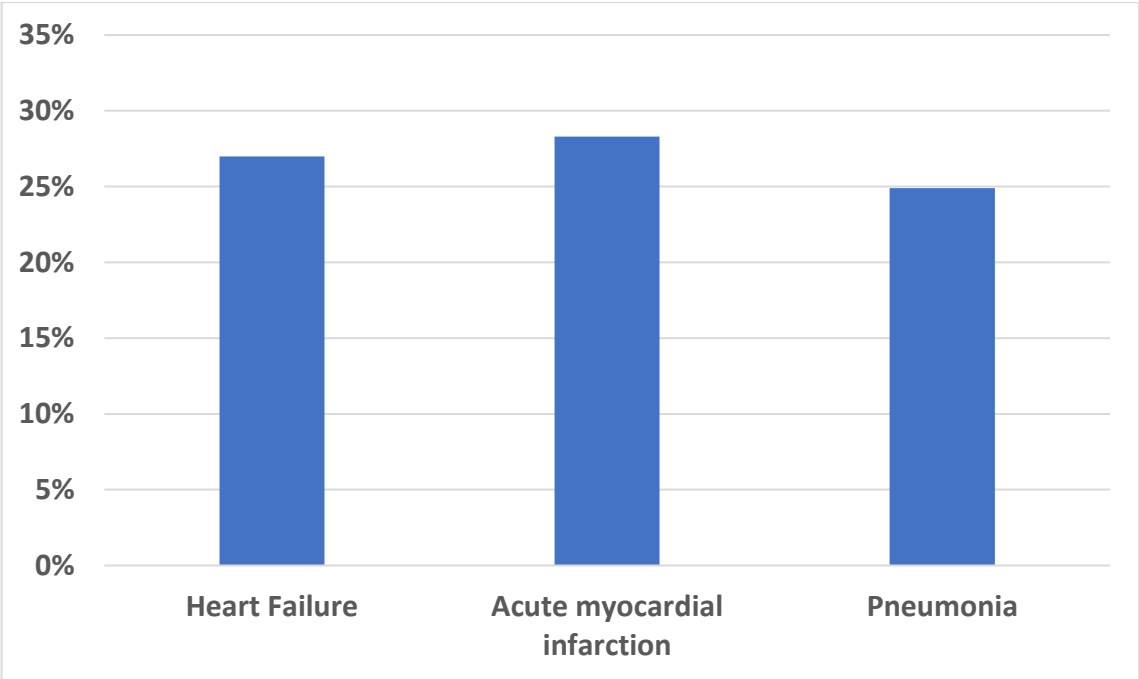


Figure shows the proportion of all hospitals that would experience any change in condition-specific penalty status if the EDAC measure were used instead of the readmission measure under the HRRP.