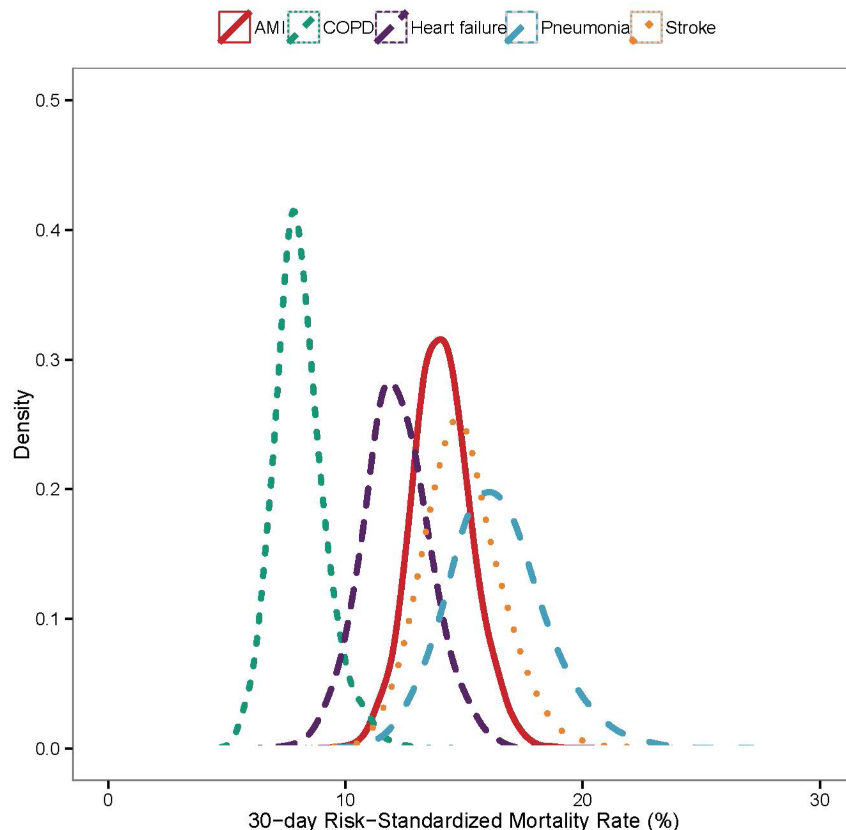
▶ Variation in 30-day mortality rates across hospitals following hospital admission for acute myocardial infarction, chronic obstructive pulmonary disease, heart failure, pneumonia, and acute ischemic stroke.

The Centers for Medicare & Medicaid Services (CMS) periodically provides a comprehensive overview of national performance on measures of mortality following hospital admissions for specific medical conditions [1]. The condition-specific mortality measures assess death from any cause within 30 days of the date of hospital admissions for acute myocardial infarction (AMI), chronic obstructive pulmonary disease (COPD), heart failure, pneumonia, or acute ischemic stroke, regardless of whether the patient dies while still in the hospital or after discharge from the hospital [2]. The measures include Medicare fee-for-service (FFS) beneficiaries aged 65 or older [2]. CMS began publicly reporting 30-day risk-standardized mortality rates (RSMRs) following admissions for AMI and heart failure in 2007; for pneumonia in 2008; and for COPD and stroke in 2014 [3]. Publicly reported measure results are updated annually on the *Hospital Compare* website. For 2016 public reporting, the pneumonia mortality measure cohort has been expanded to include aspiration pneumonia and non-severe sepsis patients [2]. Beginning in October 2013, CMS implemented the AMI, heart failure, and pneumonia mortality measures in the Hospital Value-Based Purchasing (HVBP) program [4]. In Fiscal Year 2021, the COPD mortality measure will be included in the HVBP program [4, 5]

FIGURE I. *Distributions of hospital RSMRs (%) for AMI, COPD, heart failure, pneumonia, and stroke, July 2012-June 2015.*



Variation in RSMRs reflects differences in performance among hospitals; wider distributions suggest more variation in quality and narrower distributions suggest less variation in quality. To determine the extent of variation present in these measures, we examined hospital RSMRs for AMI, COPD, heart failure, pneumonia, and stroke in the July 2012-June 2015 reporting period. We included hospitals with 25 or more qualifying cases. To ensure accurate assessment of each hospital, the measures use a statistical model to adjust for key differences in patient risk factors that are clinically relevant and that have strong relationships with the mortality outcome [2].

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TABLE I. *Distribution of hospital RSMRs (%) for AMI, COPD, heart failure, pneumonia, and stroke, July 2012-June 2015.*

	Distribution of RSMRs (%)				
	AMI	COPD	Heart Failure	Pneumonia	Stroke
Maximum	20.0	14.1	18.0	26.8	23.3
90%	15.7	9.5	14.0	19.1	17.1
75%	14.9	8.7	13.1	17.6	15.9
Median (50%)	14.0	8.0	12.1	16.3	14.8
25%	13.3	7.4	11.2	15.0	13.8
10%	12.5	6.8	10.4	13.9	12.9
Minimum	9.4	4.5	6.8	8.7	9.3

Hospital RSMRs for AMI, COPD, heart failure, pneumonia, and stroke were normally distributed and centered at 14.0%, 8.0%, 12.1%, 16.3%, and 14.8%, respectively (Figure 1 and Table 1). Additionally, hospitals were distributed over an interquartile range (IQR) of 1.6, 1.3, 1.9, 2.6, and 2.1 percentage points, respectively (Table 1).

For the AMI, COPD, heart failure, pneumonia, and stroke mortality measures, half of the hospitals have RSMRs within 1.6, 1.3, 1.9, 2.6, and 2.1 percentage points of the median hospital RSMR for each measure. Additionally, the range in RSMRs for the AMI, COPD, heart failure, pneumonia, and stroke mortality measures was 10.6, 9.6, 11.2, 18.1, and 14.0 percentage points, respectively. This demonstrates that there are continued opportunities for improvement.

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