2025 Pre-Rulemaking Measure Review
Preliminary Assessment

MUC ID	Title
MUC2025-044	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia (PN) Hospitalization
Measure Steward & Developer	**Proposed CMS Programs**
Centers for Medicare & Medicare Services (CMS)	Hospital Inpatient Quality Reporting Program Link: Hospital Inpatient Quality Reporting Program Hospital Value-Based Purchasing Program Link: The Hospital Value-Based Purchasing (VBP) Program

Measure Overview
Rationale: The goal of this measure is to improve patient outcomes by providing patients, physicians, hospitals, and policymakers with information about hospital-level, risk-standardized mortality rates following hospitalization for pneumonia. Measurement of patient outcomes allows for a broad view of quality of care that encompasses more than what can be captured by individual process-of-care measures. Complex and critical aspects of care, such as communication between providers, prevention of and response to complications, patient safety, and coordinated transitions to the outpatient environment, all contribute to patient outcomes but are difficult to measure by individual process measures. The goal of outcomes measurement is to risk adjust for patient conditions at the time of hospital admission and then evaluate patient outcomes. This measure was developed to identify institutions whose performance is better or worse than would be expected based on their patient case mix and therefore promote hospital quality improvement and better inform consumers about care quality.
CMS-provided program rationale: Measurement of patient outcomes related to risk-standardized mortality rates after inpatient hospitalization for pneumonia permits an overall view of care provided by individual hospitals as compared to like facilities with similar patient populations. This process can assist patients and caregivers in evaluating outcomes for specific providers in relation to care and services for treatment of pneumonia. This opportunity provides patients with the opportunity to choose an in-patient facility based on their needs and hospital performance and hospitals in identifying quality improvement opportunities.
Description: The measure estimates a hospital-level 30-day risk-standardized mortality rate (RSMR) for Medicare patients (Fee-For-Service [FFS] and Medicare Advantage [MA]) aged 65 and older discharged from the hospital with a principal diagnosis of Pneumonia. The outcome is all-cause 30-day mortality, defined as death from any cause within 30 days of the index admission date, including in-hospital death.
Measure background: Measure currently used in a Medicare program, but the measure is undergoing substantive change.
Numerator: The outcome for this measure is 30-day, all-cause mortality. We define mortality as death from any cause within 30 days of the start of the admission for patients discharged from the hospital with diagnosis coding that meets one of the two following requirements: • Principal discharge diagnosis of pneumonia; or,

Measure Overview
a. Principal discharge diagnosis of sepsis (that is not severe); and b. A secondary diagnosis of pneumonia coded as present on admission (POA); and c. No secondary diagnosis of sepsis that is both severe and coded as POA **Exclusions:** N/A
Denominator: The cohort includes admissions for patients that meet all of the following inclusion criteria: 1. Discharged from the hospital with diagnosis coding that met one of the two following requirements: a. Principal discharge diagnosis of pneumonia; or b. (i) Principal discharge diagnosis of sepsis (that is not severe); and (ii). A secondary diagnosis of pneumonia coded as present on admission (POA); and (iii). No secondary diagnosis of sepsis that is both severe and coded as POA; 2. Enrolled in Medicare FFS Part A and Part B or MA for the first 12 months prior to the date of admission and enrolled in Part A or MA during the index admission. [For VA beneficiaries hospitalized in VA hospitals, there are no Medicare FFS or MA enrollment requirements. For VA beneficiaries hospitalized in non-VA hospitals, they must be concurrently enrolled in Medicare FFS Part A or MA at the time of the index admission, to be eligible for cohort inclusion, but the 12-month Part A and B or MA enrollment prior to admission is not required.]; 3. Aged 65 or over; 4. Not transferred from another acute care facility. **Exclusions:** This measure excludes index admissions for patients that meet any of the following exclusion criteria: • Discharged alive on the day of admission or the following day and not transferred to another acute care facility; • With inconsistent or unknown vital status or other unreliable demographic data (e.g., age and sex); • Enrolled in the Medicare hospice program (or used VA hospice services) any time in the 12 months prior to the index admission, including the first day of the index admission; or • Discharged against medical advice. For patients with more than one eligible pneumonia admission in the reporting period, only one index admission per year is randomly selected for inclusion in the cohort. Additional admissions within that time period are excluded. **Exceptions:** N/A
Substantive changes from prior version: Integration of Medicare Advantage (MA beneficiaries into the cohort and modifying performance period from 3 years to 2 years.
Measure type: Outcome **Measure is a composite:** No **Measure is digital and/or an eCQM:** No **Measure is a paired or group measure:** No

Measure Overview	
Level of analysis: Facility	**Data source(s):** Digital-Administrative systems: Administrative Data (non-claims) Digital-Administrative systems: Claims Data
Care setting(s): Hospital Inpatient Acute Care Facility	**Risk adjustment or stratification:** Yes, risk adjusted.
CBE endorsement status: Endorsed	**CBE endorsement history:** Initial endorsement in 2007. Endorsed during maintenance review in 2020.
Is measure currently used in CMS programs? Yes, this measure was implemented in Hospital Value-Based Purchasing in 2013 and suspended in 2022.	**Measure addresses statutorily required area?** No

Evaluation

Meaningfulness

Importance	
Type of evidence:	Empirical data; Peer-Reviewed Original Research; Peer-Reviewed Systematic Review [MUC Entry/Review Information Tool (MERIT) Submission Form, Empiric Evidence Attachment]
Importance: This measure aims to improve patient outcomes by providing information on hospital-level, RSMRs after hospitalization for pneumonia. By focusing on patient outcomes rather than individual care processes, the measure captures the overall quality of care, including complex factors such as provider communication, complication management, patient safety, and care transitions. Outcomes are risk adjusted based on patient conditions at admission, allowing fair comparisons across hospitals. This measure helps identify hospitals performing better or worse than expected, supporting quality improvement efforts and informing patients, providers, and policymakers about care quality. During CBE endorsement review in 2020, the committee found the evidence supporting the importance of this measure to be sufficient.	
Rating: Met; Prior CBE Endorsement	

Conformance
Measure alignment with conceptual intent: The intent of this measure is to estimate a hospital-level 30-day RSMR for Medicare patients (FFS and MA) aged 65 and older discharged from the hospital with a principal diagnosis of pneumonia. The measure's numerator, denominator, and exclusions are clearly defined and directly support the intent of this measure. The numerator includes patients aged 65 and older who died from any cause within 30 days of a qualifying hospital discharge for pneumonia or non-severe sepsis with pneumonia present on admission. The denominator includes patients discharged from the hospital with a principal discharge diagnosis of pneumonia or if they have a principal diagnosis of non-severe sepsis, a secondary diagnosis of pneumonia present on admission, and no secondary diagnosis of severe sepsis also present on admission. This measure aligns with the Hospital Inpatient Quality Reporting (IQR) objective to improve the quality of care that hospitals provide and to distribute clearly defined and objective data about hospital performance as well as the Hospital Value-Based Purchasing (VBP) Program that encourages hospitals to improve the quality, efficiency, patient experience, and safety of care.
Rating: Met; Prior CBE Endorsement

Feasibility	
eCQM feasibility testing/analysis conducted:	No, not an eCQM

Feasibility
Feasibility: All data elements are in defined fields in electronic sources and sourced from Medicare enrollment data. United States Core Data for Interoperability (USCDI)/USCDI+ Quality alignment was not assessed. Claims data are widely available, standardized, and cost effective, as they are routinely collected for billing purposes. They also allow for large-scale and longitudinal analysis across diverse patient populations and care settings. During CBE endorsement review in 2020, the committee found the feasibility of this measure to be sufficiently demonstrated.
Rating: Met; Prior CBE Endorsement

Validity	
Validity testing method(s):	Empiric Validity [MERIT Submission Form]
Testing level(s):	Facility
Was this measure tested in the same target population as the CMS program?	Yes
Validity: The developer assessed the validity of the Pneumonia Mortality measure by comparing its scores with existing quality metrics where a relationship was expected. Specifically, they examined correlations between the Pneumonia Mortality measure and components of the Overall Hospital Quality Star Rating, including the Summary Score (with and without the Mortality Group) and the Mortality Group Score (with and without the Pneumonia Mortality Measure). Because the Pneumonia Mortality measure follows a lower-is-better scale while Star Rating measures follow a higher-is-better scale, they hypothesized a weak-to-moderate negative correlation between the Pneumonia Mortality measure and Star Rating-related measures. Pearson's correlation coefficients were calculated for hospitals with at least 25 admissions between January 1, 2022, and December 31, 2023. The Pneumonia Mortality measure showed negative correlations with the Star Rating Overall Summary Scores ($r=-0.270$, $p < .0001$), the Star Ratings Adjusted summary score excluding the Mortality Group ($r=-0.050$, $p = .0092$), the Star Rating Mortality Group Scores ($r=-0.515$, $p < .0001$), and the Star Rating Adjusted Mortality Group Scores excluding the Pneumonia Mortality Measure ($r=-0.402$, $p < .0001$). These findings are consistent with expectations, reinforcing the relationship between lower Pneumonia Mortality scores and higher Star Ratings as indicators of better quality of care. During CBE endorsement review in 2020, the committee found the validity of this measure to be sufficiently demonstrated.	
Threats to validity: The developer addressed threats to validity through use of a robust risk-adjustment model with acceptable performance. The risk model uses patient functional status, patient-level demographics, patient-level health status, and clinical conditions, including a case-mix adjustment comorbidities and severity of illness.	
Rating: Met, Prior CBE Endorsement	

 The analyses upon which this publication (or document) is based were performed under Contract Number 75FCMC23C0010, entitled, "National Consensus Development and Strategic Planning for Health Care Quality Measurement," sponsored by the Department of Health and Human Services, Centers for Medicare & Medicaid Services. Restricted: Use, duplication, or disclosure is subject to the restrictions as stated in Contract Number 75FCMC23C0010 between the Government and Battelle.

Reliability	
Reliability testing method(s):	Random Split-half Correlation [MERIT Submission Form, supplemental attachment]
Testing level:	Facility
Reliability discussion: The developer conducted permutation resampling to calculate the intraclass correlation coefficient (ICC) at the accountable entity-level. The overall ICC for hospitals with at least 25 admissions was 0.900. When at least 70% of the entities have a reliability >0.6, a measure is considered capable of differentiating entities by quality of performance. During collaboration on this PA, the developer shared that reliability results used 2 years of data (2022-2023) from 3,741 facilities with at least 25 admissions. The developer provided the minimum, maximum, median, and 25th and 75th percentiles. Among hospitals with at least 25 admissions, the minimum reliability was 0.264, the median reliability was 0.907 (IQR: 0.905-0.909), and the maximum reliability was 0.911. Over 75% of facilities exceeded the recommended minimum reliability threshold of 0.6. During CBE endorsement review in 2020, the committee found the reliability of this measure to be sufficiently demonstrated.	
Additional reliability analyses: Not additional analyses were conducted.	
Rating: Met; Prior CBE Endorsement	

Usability	
Usability considered in application:	Yes, the submission materials briefly discuss the measure's usability within relevant programs.
Usability discussion: The measure is currently used in a CMS program and has demonstrated actionable insights for providers in the intended setting. The expansion of MA data doubles the cohort size, improves measure reliability, and more accurately reflects the quality of care for both FFS and MA beneficiaries. Since implementation of the current version of the measure, the developer has not identified unintended consequences but states that they are committed to monitoring this measure's use and assessing potential unintended consequences over time, such as the inappropriate shifting of care, increased patient morbidity and mortality, and other negative unintended consequences for patients. During CBE endorsement review in 2020, the committee found the use/usability of this measure to be sufficiently demonstrated.	
Rating: Met; Prior CBE Endorsement	

 The analyses upon which this publication (or document) is based were performed under Contract Number 75FCMC23C0010, entitled, "National Consensus Development and Strategic Planning for Health Care Quality Measurement," sponsored by the Department of Health and Human Services, Centers for Medicare & Medicaid Services. Restricted: Use, duplication, or disclosure is subject to the restrictions as stated in Contract Number 75FCMC23C0010 between the Government and Battelle.

Appropriateness of Scale

Appropriateness of Scale	
Similar or related measures in program(s):	Hybrid Hospital-Wide All-Cause Risk Standardized Mortality Measure (HWM) in Hospital IQR Hospital 30-Day, All-Cause, Risk-Standardized Readmission Rate (RSRR) Following Pneumonia Hospitalization in HRRP Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization in Hospital VBP
Measure balance, burden, and value across target populations/measured entities: The developer notes that pneumonia is a well-established target of clinical quality and safety monitoring. Several measures currently in use in CMS quality programs complement this measure, as noted above. This measure is distinct from the related measures because it is condition specific to pneumonia mortality. Regarding balance of this measure's performance, burden, and benefit across populations, the developer's literature review and analysis do not indicate a potential for differential benefit or harm to specific subgroups of participating entities or their patient populations. **Considerations for the committee:** Based on clinical and professional experience, the committee should consider the distribution of benefit and risks/burdens of the measure within the proposed program population.	

Time-to-Value Realization

Time-to-Value Realization	
Plan for near- and long-term impacts after implementation:	None specified
Measure implementation impacts over time: Incorporating MA data will extend the measure to a broader group of Medicare beneficiaries, thereby improving representativeness and reducing potential selection bias. In the near term, some hospitals may experience modest changes in scores as MA beneficiaries are incorporated. Over the longer term, a single, comprehensive Medicare cohort will provide more consistent tracking of performance trends, enhance comparability across hospitals and regions, and better reflect true differences in hospital quality. **Considerations for the committee:** • What are the potential near- and long-term impacts of this measure on measured entities, proposed CMS programs, and patient populations? • Will benefits and burdens associated with this measure be realized within an appropriate implementation time frame? • How will this measure mature through revisions in the future if added to the Hospital IQR and Hospital VBP measure sets?	