2025 Pre-Rulemaking Measure Review
Preliminary Assessment

MUC ID	Title
MUC2025-046	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Coronary Artery Bypass Graft (CABG) Surgery
Measure Steward & Developer	**Proposed CMS Programs**
Centers for Medicare & Medicaid Services (CMS)	Hospital Inpatient Quality Reporting (IQR) Program Link: Hospital Inpatient Quality Reporting Program Hospital Value-Based Purchasing (VBP) Program Link: Hospital Value-Based Purchasing 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 a qualifying isolated CABG procedure. 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 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 related to coronary artery bypass graph (CABG) procedures 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 hospitals in relation to care and services for treatment of patients undergoing CABG procedures. This process provides patients with the opportunity to choose an in-patient facility based on their needs and hospital performance and provides hospitals with the chance to identify 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 CABG. 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 procedure date from the CABG index admission for patients discharged from the hospital after undergoing a qualifying isolated CABG procedure.

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Measure Overview	
Exclusions: N/A	
Denominator: The cohort includes admissions for patients that meet all of the following inclusion criteria: 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 US Department of Veterans Affairs (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.]; Aged 65 or over; Having a qualifying isolated CABG procedure during the index admission. Isolated CABG surgeries are defined as those procedures performed without the following concomitant valve or other major cardiac, vascular, or thoracic procedures: valve procedures; atrial and/or ventricular septal defects; congenital anomalies; other open cardiac procedures; heart transplants; aorta or other non-cardiac arterial bypass procedures; head, neck, intracranial vascular procedures; or other chest and thoracic procedures. **Exclusions:** This measure excludes index admissions for patients that meet any of the following exclusion criteria: With inconsistent or unknown vital status or other unreliable demographic data (e.g., age and sex); Discharged against medical advice; Admissions for subsequent qualifying CABG procedures during the measurement period; For patients with more than one eligible CABG 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 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
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 adjustment model
CBE endorsement status: Endorsed	**CBE endorsement history:** Initial endorsement 2014. Endorsed during maintenance review in 2022.
Is measure currently used in CMS programs? Yes, Hospital IQR 2015-2022, Hospital VBP 2022-current.	**Measure addresses statutorily required area?** No

Evaluation

Meaningfulness

Importance	
Type of evidence:	Empirical data; Peer-Reviewed Original Research; Peer-Reviewed Systematic Review.
Importance: This measure seeks to improve patient outcomes by reporting hospital-level, risk-standardized mortality rates after isolated CABG procedures. By focusing on patient outcomes rather than individual care processes, it provides a comprehensive view of care quality, including factors such as provider communication, complication management, patient safety, and care transitions. Evidence from recent studies provided by the developer shows that factors such as hospital volume and timing of mortality are relevant, reinforcing the appropriateness and utility of the 30-day mortality definition for evaluating CABG outcomes. During CBE endorsement review in 2022, 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 improve patient outcomes by providing patients, physicians, hospitals, and policymakers with information about hospital-level, risk-standardized mortality rates following hospitalization for a qualifying isolated CABG procedure. The numerator is the number of patients aged 65 or older who died from any cause within 30 days after discharge from a qualifying isolated CABG procedure, while the denominator includes eligible Medicare or VA patients who underwent such procedures, excluding those with unreliable data, multiple admissions, or who were discharged against medical advice. This measure aligns with the Hospital 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 VBP Program goal to 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: All data elements are in defined fields in electronic sources; alignment with United States Core Data for Interoperability (USCDI)/USCDI+ Quality was not assessed.	

Feasibility
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 2022, 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, Attachments]
Testing level(s)	Facility
Was this measure tested in the same target population as the CMS program?	Yes
Validity: Empiric validity testing was done at the facility level in a sample of 971 patients with a reliability result of 0.726. Because the CABG Mortality measure follows a lower-is-better scale while Star Rating measures follow a higher-is-better scale, the developer hypothesized a weak-to-moderate negative correlation between the CABG Mortality measure and Star Rating-related measures. The CABG Mortality measure showed negative correlations with the Star Rating Overall Summary Scores (-0.298, $p < .0001$), the Star Ratings Adjusted summary score excluding the Mortality Group (-0.131, $p < .0001$), the Star Rating Mortality Group Scores (-0.408, $p < .0001$), and the Star Rating Adjusted Mortality Group Scores excluding the CABG Mortality Measure (-0.325, $p < .0001$). Data were not used in testing but will be included once the measure is implemented, as it was with the original CABG Mortality measure. During CBE endorsement review in 2022, 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 risk-adjustment model. The risk model uses patient functional status, patient-level demographics, patient-level health status, and clinical conditions including a case-mix adjustment for comorbidities and severity of Illness.	
Rating: Met; Prior CBE Endorsement	

Reliability	
Reliability testing method(s):	Random Split-half Correlation [MERIT Submission Form, Attachments]
Testing level:	Facility
Reliability discussion: The developer conducted split-half reliability to calculate the intraclass correlation coefficient (ICC) at the accountable	

Reliability
entity level across 100 permutation split samples. The overall ICC for hospitals with at least 25 admissions was 0.726. When at least 70% of the entities have a reliability >0.6, a measure is considered capable of differentiating entities by quality of performance. Reliability results used 2 years of data (2022-2023) from 971 facilities with at least 25 admissions. During collaboration on this PA, the developer provided the minimum, maximum, median, and 25th and 75th percentiles. Among hospitals with at least 25 admissions, the minimum reliability was 0.633, the median reliability was 0.729 (IQR: 0.715-0.744), and the maximum reliability was 0.768. All facilities exceeded the recommended minimum reliability threshold of 0.6. During CBE endorsement review in 2022, the committee found the reliability of this measure to be demonstrated sufficiently.
Additional reliability analyses: No 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 both Hospital IQR and Hospital VBP 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 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 2022, the committee found the use/usability of this measure to be sufficiently demonstrated.	
Rating: Met, Prior CBE Endorsement	

Appropriateness of Scale

Appropriateness of Scale	
Similar or related measures in program(s):	Hybrid Hospital-Wide (All-Cause, All-Procedure) Risk-Standardized Mortality (HWM) in Hospital IQR Hospital 30-day, All-Cause, Risk-Standardized Mortality Rate Following Coronary Artery Bypass Graft (CABG) Surgery in Hospital VBP

Appropriateness of Scale	
	Hospital 30-Day, All-Cause, Unplanned, Risk-Standardized Readmission Rate (RSRR) Following Coronary Artery Bypass Graft (CABG) Surgery in Hospital Readmissions Reduction Program
Measure balance, burden and value across target populations/measured entities: While the measure developer identified several related measures within other CMS programs, only one similar measure was identified within either Hospital IQR or Hospital VBP programs. The current measure under consideration is distinct from the related measure because it is a procedure specific to CABG mortality. The identified related measure assess a different outcome and/or cohort. 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 benefits 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's revisions on measured entities, Hospital IQR and Hospital VBP 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?	