
CBE ID

3032

Title

STS Mitral Valve Repair/Replacement (MVRR) + Coronary Artery Bypass Graft (CABG) Composite Score

Endorsement Status

Endorsed

Is Under Review

No

Next Maintenance Cycle

Fall 2026

Previous Endorsement Cycle

Fall 2020

Initial Endorsement

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Steward

The Society of Thoracic Surgeons

1.0 New or Maintenance

Maintenance

1.1 Measure Structure

Composite Measure

1.3 Electronic Clinical Quality Measure (eCQM)

No

1.6 Measure Description

The STS Mitral Valve Repair/Replacement (MVRR) + Coronary Artery Bypass Graft (CABG) Composite Score measures surgical performance for MVRR + CABG with or without concomitant Atrial Septal Defect (ASD) and Patent Foramen Ovale (PFO) closures, tricuspid valve repair (TVr), or surgical ablation for atrial fibrillation (AF). To assess overall quality, the STS MVRR +CABG Composite Score comprises two domains consisting of six measures:

Domain 1 - Absence of Operative Mortality

Proportion of patients (risk-adjusted) who do not experience operative mortality. Operative mortality is defined as death before hospital discharge or within 30 days of the operation.

Domain 2 - Absence of Major Morbidity

Proportion of patients (risk-adjusted) who do not experience any major morbidity. Major morbidity is defined as the occurrence of any one or more of the following major complications:

1. Prolonged ventilation,
2. Deep sternal wound infection,
3. Permanent stroke,
4. Renal failure, and
5. Reoperations for bleeding, coronary graft occlusion, prosthetic or native valve dysfunction, and other cardiac reasons, but not for other non-cardiac reasons.

Outcome data are collected on all patients and from all participants. For optimal measure reliability, participants meeting a volume threshold of at least 25 cases over 3 years receive a score for each of the two domains, plus an overall composite score. The overall composite score is created by “rolling up” the domain scores into a single number. In addition to receiving a numeric score, participants are assigned to rating categories designated by the following:

- 1 star - lower-than-expected performance
- 2 stars - as-expected performance
- 3 stars - higher-than-expected performance

1.8 Level of Analysis

Clinician: Group/Practice, Facility

1.14 Numerator

Due to the complex methodology used to construct the composite measure, it is impractical to separately discuss the numerator and denominator. The following discussion describes how each domain score is calculated and how these are combined into an overall composite score. The STS Mitral Valve Repair/Replacement (MVRR) Composite Score comprises two domains consisting of six measures: Domain 1 - Absence of Operative Mortality Proportion of patients (risk-adjusted) who do not experience operative mortality. Operative mortality is defined as death before hospital discharge or within 30 days of the operation. Domain 2 - Absence of Major Morbidity Proportion of patients (risk-adjusted) who do not experience any major morbidity. Major morbidity is defined as the occurrence of any one or more of the following major complications: 1. Prolonged ventilation, 2. Deep sternal wound infection, 3. Permanent stroke, 4. Renal failure, and 5. Reoperations for bleeding, coronary graft occlusion, prosthetic or native valve dysfunction, and other cardiac reasons, but not for other non-cardiac reasons. Participants receive a score for each of the two domains, plus an overall composite score. The overall composite score was created by “rolling up” the domain scores into a single number. In addition to receiving a numeric score, participants are assigned to rating categories designated by the following: 1 star - lower-than-expected performance 2 stars - as-expected performance 3 stars - higher-than-expected performance

Patient Population: The analysis population consists of patients aged 18 years or older who MVRR + CABG with or without concomitant Atrial Septal Defect (ASD) and Patent Foramen Ovale (PFO) closures, tricuspid valve repair (TVr), or surgical ablation for atrial fibrillation (AF).

Time Window: 3 years

Data Completeness Requirement: Participants are excluded from the analysis if they have fewer than 25 MVRR + CABG procedures in the patient population.

Estimation of Composite Scores and Star Ratings: To be consistent with the conventions of previous composite measures, risk-adjusted event rates were first converted into risk-adjusted absence-of-event rates. To calculate the composite, participant-specific absence of

mortality rates and absence of morbidity rates were weighted inversely by their respective standard deviations across participants. This procedure was equivalent to first rescaling the absence of mortality rates and absence of morbidity rates by their respective standard deviations across participants, and then assigning equal weighting to the rescaled rates. Finally, in order to draw statistical inferences about participant performance, a Bayesian credible interval surrounding each participant's composite score was calculated. Unlike frequentist confidence intervals, Bayesian credible intervals have an intuitively direct interpretation as an interval containing the true value of the composite score with a specified probability (e.g., 95%). To determine star ratings for each participant, the credible interval of its composite score was compared with the STS average. Participants whose intervals were entirely above the STS average were classified as 3-star (higher than expected performance), and participants whose intervals were entirely below the STS average were classified as 1-star (lower than expected performance). Credible intervals based on different probability levels (90%, 95%, 98%) were explored, and the resulting percentages of 1, 2, and 3-star programs were calculated.

1.15 Denominator

See response in S.4. Numerator Statement for complete description of measure specifications. Patient Population: The analysis population consists of patients aged 18 years or older who MVR + CABG with or without concomitant Atrial Septal Defect (ASD) and Patent Foramen Ovale (PFO) closures, tricuspid valve repair (TVr), or surgical ablation for atrial fibrillation (AF).

6.1.2 Current or Planned Use(s)

Public Reporting, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

6.1.3 Current Use(s)

Public Reporting, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

Exclusions

Data Completeness Requirement: Participants are excluded from the analysis if they have fewer than 25 MVR + CABG procedures in the patient population.

Planned Use

Public Reporting, Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

Risk Adjustment

Statistical risk model

Target Population

Adults, Elderly

Steward Organization

The Society of Thoracic Surgeons

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