



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 0696

Corresponding Measures:

De.2. Measure Title: STS CABG Composite Score

Co.1.1. Measure Steward: The Society of Thoracic Surgeons

De.3. Brief Description of Measure: The STS CABG Composite Score comprises four domains consisting of 11 individually NQF-endorsed cardiac surgery measures:

Domain 1) Absence of Operative Mortality – Proportion of patients (risk-adjusted) who do not experience operative mortality. Operative mortality is defined as death during the same hospitalization as surgery or after discharge but within 30 days of the procedure;

Domain 2) Absence of Major Morbidity – Proportion of patients (risk-adjusted) who do not experience any major morbidity. Major morbidity is defined as having at least one of the following adverse outcomes: 1. reoperations for any cardiac reason, 2. renal failure, 3. deep sternal wound infection, 4. prolonged ventilation/intubation, 5. cerebrovascular accident/permanent stroke;

Domain 3) Use of Internal Mammary Artery (IMA) – Proportion of first-time CABG patients who receive at least one IMA graft;

Domain 4) Use of All Evidence-based Perioperative Medications – Proportion of patients who receive all required perioperative medications for which they are eligible. The required perioperative medications are: 1. preoperative beta blockade therapy, 2. discharge anti-platelet medication, 3. discharge beta blockade therapy, and 4. discharge anti-lipid medication.

All measures are based on audited clinical data collected in a prospective registry. Participants receive a score for each of the 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 one star (below average performance), two stars (average performance), or three stars (above average performance). For consenting participants, scores and star ratings are publicly reported on the STS website.

1b.1. Developer Rationale: N/A

S.4. Numerator Statement: Please see Appendix

S.6. Denominator Statement: Please see Appendix

S.8. Denominator Exclusions: Please see Appendix

De.1. Measure Type: Composite

S.17. Data Source: Registry Data

S.20. Level of Analysis: Clinician : Group/Practice, Facility

IF Endorsement Maintenance – Original Endorsement Date: Jan 17, 2011 **Most Recent Endorsement Date:** Jul 31, 2020

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.**

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[0696_-_NQF_evidence_attachment_v7_1-112619update.docx](#)

1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?

Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

No

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.

N/A

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.

The measure was calculated using STS data for patients undergoing isolated CABG in two consecutive time periods, July 2015 – June 2016 and July 2016 – June 2017.

The table below summarizes the distributions of the STS CABG composite score in the last four quarterly harvests for which the composite scores were calculated. The fall harvests cover data from July of the previous year until June of the current year. The spring harvests cover data in the previous calendar year.

Distribution of STS isolated CABG composite measure in the latest four STS harvests for which the measure was reported

Stat	STS Harvests*			
	Latest	Spring 2017	Fall 2016	Spring 2016
# Participant	945	1006	882	1026
# Operations	145815	150882	129972	149917
Mean	0.967	0.967	0.967	0.966
STD	0.00972	0.0109	0.0102	0.0104
IQR	0.0123	0.0142	0.0131	0.0134
Percentiles				
0%	0.919	0.923	0.917	0.912
10%	0.954	0.952	0.954	0.953
20%	0.959	0.958	0.960	0.958
30%	0.962	0.962	0.964	0.962
40%	0.965	0.965	0.966	0.965
50%	0.968	0.968	0.969	0.968
60%	0.970	0.971	0.971	0.970
70%	0.972	0.973	0.974	0.973
80%	0.975	0.976	0.976	0.975
90%	0.978	0.980	0.978	0.978
100%	0.985	0.989	0.986	0.986
US Geographic Region				

Midwest	267	283	261	290
Northeast	126	129	112	134
South	359	381	327	386
West	185	207	178	216
Other	8	6	4	0

* Composite measure analysis of each harvest uses the most recent one year of data until the end of last quarter. For example spring 2017 harvest uses data until December 2016.

(If data in above table does not display clearly, please see version in Appendix.)

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

N/A

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. (*This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.*) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.

This composite measure gauges the performance of the STS participant (typically a hospital, a hospital group, or a surgeon group). It is not a patient or operation level measure. Therefore at the composite score level, we do not provide data stratified by patient characteristics. Instead, we provide results stratified by participant characteristics.

Distribution of isolated CABG composite measures by regions, fall 2017 harvest, July 2016 - June 2017

Stat	Midwest	Northeast	South	West	Other*
# Participant	267	126	359	185	8
# Operations	33448	24800	63107	22601	1859
Mean	0.967	0.970	0.966	0.966	0.957
STD	0.00932	0.00848	0.0101	0.00958	0.0073
IQR	0.0109	0.0114	0.0119	0.0128	0.012
Percentiles					
0%	0.919	0.945	0.931	0.937	0.945
10%	0.957	0.958	0.951	0.953	0.948
20%	0.961	0.963	0.958	0.958	0.950
30%	0.964	0.967	0.962	0.961	0.952
40%	0.966	0.970	0.964	0.964	0.955
50%	0.969	0.972	0.966	0.967	0.958
60%	0.971	0.974	0.969	0.969	0.960
70%	0.973	0.976	0.971	0.972	0.962
80%	0.975	0.977	0.974	0.974	0.964
90%	0.978	0.979	0.978	0.977	0.964
100%	0.983	0.984	0.984	0.985	0.965

*Non-North American/Canadian

Distribution of isolated CABG composite measures by regions, fall 2016 harvest, July 2015- June 2016

Stat	Midwest	Northeast	South	West	Other*
# Participant	261	112	327	178	4
# Operations	32530	20875	55513	20427	627
Mean	0.968	0.971	0.966	0.965	0.960
STD	0.00911	0.00734	0.0109	0.0114	0.00938
IQR	0.0128	0.00887	0.0141	0.0144	0.00922
Percentiles					

0%	0.928	0.943	0.927	0.917	0.946
10%	0.956	0.963	0.952	0.952	0.950
20%	0.961	0.965	0.959	0.957	0.954
30%	0.964	0.968	0.962	0.961	0.958
40%	0.967	0.969	0.965	0.965	0.961
50%	0.969	0.972	0.968	0.968	0.962
60%	0.971	0.974	0.971	0.970	0.964
70%	0.974	0.975	0.973	0.972	0.965
80%	0.975	0.978	0.976	0.974	0.966
90%	0.978	0.980	0.979	0.977	0.966
100%	0.984	0.986	0.985	0.985	0.967

*Non-North American/Canadian

(If data in above tables does not display clearly, please see versions in Appendix.)

At the individual domain level, the risk-adjusted odds ratio associated with sex and race were:

Risk-adjusted odds ratio of mortality:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.59 (95% confidence interval: 1.45-1.74)
- Black v white (including patients with race other than white, black, Asian): 1.17 (1.03 – 1.32)
- Asian v white (including patients with race other than white, black, Asian): 0.97 (0.80 – 1.19)

Risk-adjusted odds ratio of morbidity:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.30 (1.24-1.36)
- Black v white (including patients with race other than white, black, Asian): 1.27 (1.18-1.36)
- Asian v white (including patients with race other than white, black, Asian): 1.16 (1.04 – 1.30)

For details of risk adjustment models, please see section 2b3 in the testing form.

The observed proportions of IMA use and perioperative medications were:

Observed proportions of IMA use:

- Female: 98.5% v male: 99.2%
- Black: 98.7% v non-black 99.1%:

Observed proportions of use of perioperative medications:

- Female: 92.6% v male: 92.5%
- Black: 93.2% v non-black: 92.5%

Note: Consistent with previous NQF reports, Non-North American hospitals are not included in models or percentages computations above. Results are virtually unchanged when these hospitals are included. This composite measure gauges the performance of the STS participant (typically a hospital, a hospital group, or a surgeon group). It is not a patient or operation level measure. Therefore at the composite score level, we do not provide data stratified by patient characteristics. Instead, we provide results stratified by participant characteristics.

Distribution of isolated CABG composite measures by regions, fall 2017 harvest, July 2016 - June 2017

Stat	Midwest	Northeast	South	West	Other*
# Participant	267	126	359	185	8
# Operations	33448	24800	63107	22601	1859
Mean	0.967	0.970	0.966	0.966	0.957
STD	0.00932	0.00848	0.0101	0.00958	0.0073
IQR	0.0109	0.0114	0.0119	0.0128	0.012
Percentiles					
0%	0.919	0.945	0.931	0.937	0.945
10%	0.957	0.958	0.951	0.953	0.948
20%	0.961	0.963	0.958	0.958	0.950

30%	0.964	0.967	0.962	0.961	0.952
40%	0.966	0.970	0.964	0.964	0.955
50%	0.969	0.972	0.966	0.967	0.958
60%	0.971	0.974	0.969	0.969	0.960
70%	0.973	0.976	0.971	0.972	0.962
80%	0.975	0.977	0.974	0.974	0.964
90%	0.978	0.979	0.978	0.977	0.964
100%	0.983	0.984	0.984	0.985	0.965

*Non-North American/Canadian

Distribution of isolated CABG composite measures by regions, fall 2016 harvest, July 2015- June 2016

Stat	Midwest	Northeast	South	West	Other*
# Participant	261	112	327	178	4
# Operations	32530	20875	55513	20427	627
Mean	0.968	0.971	0.966	0.965	0.960
STD	0.00911	0.00734	0.0109	0.0114	0.00938
IQR	0.0128	0.00887	0.0141	0.0144	0.00922

Percentiles

0%	0.928	0.943	0.927	0.917	0.946
10%	0.956	0.963	0.952	0.952	0.950
20%	0.961	0.965	0.959	0.957	0.954
30%	0.964	0.968	0.962	0.961	0.958
40%	0.967	0.969	0.965	0.965	0.961
50%	0.969	0.972	0.968	0.968	0.962
60%	0.971	0.974	0.971	0.970	0.964
70%	0.974	0.975	0.973	0.972	0.965
80%	0.975	0.978	0.976	0.974	0.966
90%	0.978	0.980	0.979	0.977	0.966
100%	0.984	0.986	0.985	0.985	0.967

*Non-North American/Canadian

At the individual domain level, the risk-adjusted odds ratio associated with sex and race were:

Risk-adjusted odds ratio of mortality:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.59 (95% confidence interval: 1.45-1.74)
- Black v white (including patients with race other than white, black, Asian): 1.17 (1.03 – 1.32)
- Asian v white (including patients with race other than white, black, Asian): 0.97 (0.80 – 1.19)

Risk-adjusted odds ratio of morbidity:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.30 (1.24-1.36)
- Black v white (including patients with race other than white, black, Asian): 1.27 (1.18-1.36)
- Asian v white (including patients with race other than white, black, Asian): 1.16 (1.04 – 1.30)

For details of risk adjustment models, please see section 2b4.

The observed proportions of IMA use and perioperative medications were:

Observed proportions of IMA use:

- Female: 98.5% v male: 99.2%
- Black: 98.7% v non-black 99.1%:

Observed proportions of use of perioperative medications:

- Female: 92.6% v male: 92.5%
- Black: 93.2% v non-black: 92.5%

Note: Consistent with previous NQF reports, Non-North American hospitals are not included in models or percentages computations

above. Results are virtually unchanged when these hospitals are included. This composite measure gauges the performance of the STS participant (typically a hospital, a hospital group, or a surgeon group). It is not a patient or operation level measure. Therefore at the composite score level, we do not provide data stratified by patient characteristics. Instead, we provide results stratified by participant characteristics.

Distribution of isolated CABG composite measures by regions, fall 2017 harvest, July 2016 - June 2017

Stat	Midwest	Northeast	South	West	Other*
# Participant	267	126	359	185	8
# Operations	33448	24800	63107	22601	1859
Mean	0.967	0.970	0.966	0.966	0.957
STD	0.00932	0.00848	0.0101	0.00958	0.0073
IQR	0.0109	0.0114	0.0119	0.0128	0.012
Percentiles					
0%	0.919	0.945	0.931	0.937	0.945
10%	0.957	0.958	0.951	0.953	0.948
20%	0.961	0.963	0.958	0.958	0.950
30%	0.964	0.967	0.962	0.961	0.952
40%	0.966	0.970	0.964	0.964	0.955
50%	0.969	0.972	0.966	0.967	0.958
60%	0.971	0.974	0.969	0.969	0.960
70%	0.973	0.976	0.971	0.972	0.962
80%	0.975	0.977	0.974	0.974	0.964
90%	0.978	0.979	0.978	0.977	0.964
100%	0.983	0.984	0.984	0.985	0.965

*Non-North American/Canadian

Distribution of isolated CABG composite measures by regions, fall 2016 harvest, July 2015- June 2016

Stat	Midwest	Northeast	South	West	Other*
# Participant	261	112	327	178	4
# Operations	32530	20875	55513	20427	627
Mean	0.968	0.971	0.966	0.965	0.960
STD	0.00911	0.00734	0.0109	0.0114	0.00938
IQR	0.0128	0.00887	0.0141	0.0144	0.00922
Percentiles					
0%	0.928	0.943	0.927	0.917	0.946
10%	0.956	0.963	0.952	0.952	0.950
20%	0.961	0.965	0.959	0.957	0.954
30%	0.964	0.968	0.962	0.961	0.958
40%	0.967	0.969	0.965	0.965	0.961
50%	0.969	0.972	0.968	0.968	0.962
60%	0.971	0.974	0.971	0.970	0.964
70%	0.974	0.975	0.973	0.972	0.965
80%	0.975	0.978	0.976	0.974	0.966
90%	0.978	0.980	0.979	0.977	0.966
100%	0.984	0.986	0.985	0.985	0.967

*Non-North American/Canadian

At the individual domain level, the risk-adjusted odds ratio associated with sex and race were:

Risk-adjusted odds ratio of mortality:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.59 (95% confidence interval: 1.45-1.74)
- Black v white (including patients with race other than white, black, Asian): 1.17 (1.03 – 1.32)
- Asian v white (including patients with race other than white, black, Asian): 0.97 (0.80 – 1.19)

Risk-adjusted odds ratio of morbidity:

- Female (at BSA=1.8) v male (at BSA=2.0): 1.30 (1.24-1.36)
- Black v white (including patients with race other than white, black, Asian): 1.27 (1.18-1.36)
- Asian v white (including patients with race other than white, black, Asian): 1.16 (1.04 – 1.30)

For details of risk adjustment models, please see section 2b3 in the testing form.

The observed proportions of IMA use and perioperative medications were:

Observed proportions of IMA use:

- Female: 98.5% v male: 99.2%
- Black: 98.7% v non-black 99.1%:

Observed proportions of use of perioperative medications:

- Female: 92.6% v male: 92.5%
- Black: 93.2% v non-black: 92.5%

Note: Consistent with previous NQF reports, Non-North American hospitals are not included in models or percentages computations above. Results are virtually unchanged when these hospitals are included.

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4

N/A

1c. Composite Quality Construct and Rationale

1c.1. A composite performance measure is a combination of two or more component measures, each of which individually reflects quality of care, into a single performance measure with a single score.

For purposes of NQF measure submission, evaluation, and endorsement, the following will be considered composites:

- Measures with two or more individual performance measure scores combined into one score for an accountable entity.
- Measures with two or more individual component measures assessed separately for each patient and then aggregated into one score for an accountable entity:
 - all-or-none measures (e.g., all essential care processes received, or outcomes experienced, by each patient);

1c.1. Please identify the composite measure construction: [two or more individual performance measure scores combined into one score](#)

1c.2. Describe the quality construct, including:

- the overall area of quality
- included component measures and
- the relationship of the component measures to the overall composite and to each other.

Both options in 1c.1 describe the measure construction of the STS CABG Composite Score: Two or more individual performance measure scores (i.e. the 4 domains of this measure) combined into one score, and all-or-none measures (Domain 4). Additionally, Domain 2 has an "any-or-none" construction.

The STS CABG Composite Score measures surgical performance based on a combination of 11 NQF-endorsed process and outcomes measures. An NQF-endorsed structural measure, database participation, is included de facto as only STS Adult Cardiac Surgery Database participants are eligible to receive composite scores. To assess overall quality, the 11 NQF-endorsed measures are grouped into four domains, as described below.

Domain 1 – Absence of Operative Mortality

Proportion of patients (risk-adjusted) who do not experience operative mortality. Operative mortality is defined as death during the same hospitalization as surgery or after discharge but within 30 days of the procedure

Domain 2 – Absence of Major Morbidity

Proportion of patients (risk-adjusted) who do not experience any major morbidity. Major morbidity is defined as having at least one

of the following adverse outcomes: 1) reoperations for any cardiac reason, 2) renal failure, 3) deep sternal wound infection, 4) prolonged ventilation/intubation, 5) cerebrovascular accident/permanent stroke

Domain 3 – Use of Internal Mammary Artery (IMA)

Proportion of first-time CABG patients who receive at least one IMA graft. Note: Patients with prior CABG surgery or with documented contraindication for IMA use (subclavian stenosis, previous cardiac or thoracic surgery, previous mediastinal radiation, an emergent or salvage procedure or no LAD disease) are not included in the denominator.

Domain 4 – Use of All Evidence-based Perioperative Medications

Proportion of patients who receive all required perioperative medications. The required perioperative medications are: 1) preoperative beta blockade therapy; 2) discharge anti-platelet medication; 3) discharge beta blockade therapy; and 4) discharge anti-lipid medication. Note: Patients who died before discharge are not eligible to receive the 3 discharge medications. Patients with a documented contraindication for any of the 4 medications are not eligible to receive that medication. No partial credit is given for a patient who received some, but not all, of the medications for which he or she is eligible.

The STS composite measure combines four separate domain-specific scores. Different weights were assigned to the four domains to reflect their relative importance. Hence the composite score is a weighted average across four domains. 81% of the total weight was assigned to mortality, 10% to morbidity, 7% to IMA and 3% to medications.

Participants receive a score for each of the four domains, plus an overall composite score. The overall composite score is created as a weighted average of the four domain scores, as described above. In addition to receiving a numeric score, participants are assigned to rating categories designated by one to three stars.

1c.3. Describe the rationale for constructing a composite measure, including how the composite provides a distinctive or additive value over the component measures individually.

Risk-adjusted mortality has historically been the dominant outcomes metric for cardiac surgery procedures, but in an era when the average mortality rates for these procedures have declined to very low levels, differentiating performance based on mortality alone is difficult. Specifically, it fails to take into account the fact that not all operative survivors received equal quality care, e.g., patients who survive surgery but have a debilitating complication that may substantially impact long-term freedom from cardiac events. This composite provides a more comprehensive measure of overall quality.

The rationale for the use of a composite measure is threefold:

1. Data reduction – The CABG composite score simplifies evaluation of a cardiac surgery program by distilling all available NQF-endorsed measures into a simple summary.
2. Scope expansion – The CABG composite score is highly condensed, which makes it possible to track a broader range of metrics than would otherwise be possible, making provider assessments more comprehensive.
3. Provider performance valuation – If multiple indicators are to be used for evaluation of a cardiac surgery program, a method of translating several variables into a single value is necessary. This composite measure enables this translation, while giving the appropriate weight to each of the many variables.

Reference:

Peterson ED, DeLong ER, Masoudi FA, et al. ACCF/AHA 2010 position statement on composite measures for healthcare performance assessment: report of the American College of Cardiology Foundation/American Heart Association Task Force on Performance Measures (writing committee to develop a position statement on composite measures). *Circulation* 2010;121:1780-91.

1c.4. Describe how the aggregation and weighting of the component measures are consistent with the stated quality construct and rationale.

For two of the domains (mortality; IMA usage), the study endpoint corresponds to a single measure. For the other two domains (morbidity; medications), the study endpoint is defined in a manner that combines multiple measures. For these two domains, the study endpoint is a composite endpoint.

A participant's overall composite performance score is calculated as a weighted average of the domain-specific estimates described above. The weight that is applied to a given domain is inversely proportional to the standard deviation of the domain-specific scores (calculated across hospitals).

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area (check all the areas that apply):

Cardiovascular, Surgery, Surgery : Cardiac Surgery

De.6. Non-Condition Specific(check all the areas that apply):

Safety, Safety : Complications, Safety : Healthcare Associated Infections, Safety : Medication

De.7. Target Population Category (Check all the populations for which the measure is specified and tested if any):

Elderly

S.1. Measure-specific Web Page (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

https://www.sts.org/sites/default/files/documents/ACSD_DataCollectionFormV2_9_Annotated.pdf

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure Attachment:

S.2b. Data Dictionary, Code Table, or Value Sets (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: [ACSD_DataSpecificationsV2_9.pdf](#)

S.2c. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

No, this is not an instrument-based measure Attachment:

S.2d. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Not an instrument-based measure

S.3.1. For maintenance of endorsement: Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

No

S.3.2. For maintenance of endorsement, please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

None

S.4. Numerator Statement (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the

measure.

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

[Please see Appendix](#)

S.5. Numerator Details *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

[Please see Appendix](#)

S.6. Denominator Statement *(Brief, narrative description of the target population being measured)*

[Please see Appendix](#)

S.7. Denominator Details *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

[Please see Appendix](#)

S.8. Denominator Exclusions *(Brief narrative description of exclusions from the target population)*

[Please see Appendix](#)

S.9. Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

[Please see Appendix](#)

S.10. Stratification Information *(Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)*

[N/A](#)

S.11. Risk Adjustment Type *(Select type. Provide specifications for risk stratification in measure testing attachment)*

[Statistical risk model](#)

If other:

S.12. Type of score:

[Rate/proportion](#)

If other:

S.13. Interpretation of Score *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*

[Better quality = Higher score](#)

S.14. Calculation Algorithm/Measure Logic *(Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)*

[Please see discussion under section S.4 \(Appendix\) and attached articles.](#)

S.15. Sampling *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*

<p>IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed. N/A</p> <p>S.16. Survey/Patient-reported data (If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.) Specify calculation of response rates to be reported with performance measure results. N/A</p>
<p>S.17. Data Source (Check ONLY the sources for which the measure is SPECIFIED AND TESTED). If other, please describe in S.18. Registry Data</p> <p>S.18. Data Source or Collection Instrument (Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.) IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration. STS Adult Cardiac Surgery Database – Version 2.73; STS Adult Cardiac Surgery Database Version 2.8 went live on July 1, 2014; STS Adult Cardiac Surgery Database Version 2.9 went live on July 1, 2017.</p> <p>S.19. Data Source or Collection Instrument (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1) Available at measure-specific web page URL identified in S.1</p> <p>S.20. Level of Analysis (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED) Clinician : Group/Practice, Facility</p> <p>S.21. Care Setting (Check ONLY the settings for which the measure is SPECIFIED AND TESTED) Inpatient/Hospital If other:</p>
<p>S.22. COMPOSITE Performance Measure - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.) Please see section S.4-S.11 (Appendix)</p>
<p>2. Validity – See attached Measure Testing Submission Form comp_testing_v3.0_-_0696_STS_CABG_CompScore_112619update.docx</p> <p>2.1 For maintenance of endorsement Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing. No</p> <p>2.2 For maintenance of endorsement Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing. No</p> <p>2.3 For maintenance of endorsement Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions. Yes - Updated information is included</p>

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score), Abstracted from a record by someone other than person obtaining original information (e.g., chart abstraction for quality measure or registry)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields) Update this field for maintenance of endorsement.

Some data elements are in defined fields in electronic sources

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources. For maintenance of endorsement, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

As of November 2019, the STS Adult Cardiac Surgery Database has 1,066 participants in the U.S. and Canada, and local availability of data elements in electronic format will vary across institutions. Some institutions may have full EHR capability while others may have partial, or no availability. However, all data elements from participating institutions are submitted to the STS Adult Cardiac Surgery Database in electronic format following a standard set of data specifications. The majority of participating institutions obtain data entry software products that are certified for the purposes of collecting STS Adult Cardiac Surgery Database data elements.

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.

Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. Required for maintenance of endorsement. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

IF instrument-based, consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

The data elements included in this measure have been standard in the STS Adult Cardiac Surgery Database for at least 3 years and some of them have been part of the database for more than 20 years. The variables are considered to be data elements that are readily available and already collected as part of the process of providing care.

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).

Data Collection:

There are no direct costs to collect the data for this measure. Costs to develop and maintain the measure included volunteer cardiothoracic surgeon time, STS staff time, and Duke Clinical Research Institute statistician and project management time.

Other fees:

STS Adult Cardiac Surgery Database participants (single cardiothoracic surgeons or a group of surgeons) pay annual participant fees of \$3,500 or \$4,750, depending on whether the majority of surgeons in a participant group are STS members. As a benefit of STS membership, the member-majority participants are charged the lesser of the two fees. Also, member-majority participants pay an additional fee of \$150 per surgeon; non-member-majority participants pay an additional fee of \$350 per surgeon.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)
	<p>Public Reporting</p> <p>STS Public Reporting https://publicreporting.sts.org/</p> <p>STS Public Reporting https://publicreporting.sts.org/</p> <p>Quality Improvement (Internal to the specific organization)</p> <p>STS Adult Cardiac Surgery Database Participants http://www.sts.org/sts-national-database/database-managers/adult-cardiac-surgery-database</p>

4a1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

Voluntary public reporting – approximately 72% of STS Adult Cardiac Surgery Database participants are enrolled as of November 2019. The STS CABG Composite has been publicly reported for consenting participants since 2010.

Quality improvement - STS Adult Cardiac Surgery Database Participant Feedback Reports provide performance results for this measure to participants. (see details in 4a2.1.1 below)

4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

N/A

4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6

years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

N/A

4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

As of November 2019, there are 1,066 active U.S. and Canadian participants in the STS Adult Cardiac Surgery Database (ACSD). A "participant" is a cardiothoracic surgeon or group of cardiothoracic surgeons who agree to submit case records for analysis and comparison with benchmarking data for quality improvement initiatives. At the option of the surgeon or surgical group, the ACSD participant can include a hospital and/or associated anesthesiologists. It is for this reason that we have indicated (on the Specifications tab, question #S.20) that this measure is specified/tested for both the "clinician: group/practice" and "facility" levels of analysis.

All ACSD participants receive quarterly data reports with their performance results, reported in an easy-to-understand format. The participant's score is illustrated graphically in relation to the 25th, 50th and 75th percentiles of the distribution across all participants who were eligible for inclusion in that quarter's analysis, and is also accompanied by the 95% Bayesian credible interval. Surgeons easily grasp this result and the visual display clearly illustrates how they perform compared to their peers on a quarterly basis. In addition, these risk-adjusted results allow surgeons to compare their patients' outcomes with national benchmarks and to initiate quality improvement efforts as needed.

4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

Please see response under 4a2.1.1

4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.

Describe how feedback was obtained.

The adult cardiac surgeons from across the U.S. who comprise the STS Adult Cardiac Surgery Task Force meet periodically to discuss the participant reports and to consider potential enhancements to the ACSD. Additions/clarifications to the data collection form and to the content/format of the participant reports are discussed and implemented as appropriate.

Most recently, STS surgeon members have expressed interest in real-time, online data updates, which has led to the development of dashboard-type reporting on STS.org. Roll-out of the adult cardiac dashboard is underway in 2019.

Also, adult cardiac public reporting has been available since 2010 (<http://publicreporting.sts.org/acsd>), making star ratings for consenting participant groups available to participants as well as the public.

4a2.2.2. Summarize the feedback obtained from those being measured.

Please see response under 4a2.2.1

4a2.2.3. Summarize the feedback obtained from other users

Voluntary participation in ACSD public reporting has continually increased over the years that the initiative has been available, from 38% of ACSD participants in 2014, to 49% in 2016, to approximately 72% as of November 2019. This trend suggests that feedback from ACSD participants and others who access the performance data available on STS.org is sufficiently positive to promote ever-increasing participation in public reporting.

4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

N/A

Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use

for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)

If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

Please see table below displaying 2010-2018 star ratings for this measure, in percentages. (If table below does not display clearly, please see version in Appendix.)

The data demonstrate that the general trend since 2010 has been a decrease in the percentage of surgical programs with 1-star and 3-star ratings on the CABG Composite, and a corresponding increase in 2-star programs. This trend is consistent with the performance improvement goals of the STS star rating program, which seek to reduce variation in performance and to drive all participants in the STS Adult Cardiac Surgery Database toward the 2-star (or "as expected") category.

Stars	2018	2017	2016	2015	2014	2013	2012	2011	2010
*	4.37	4.55	5.29	5.82	4.59	9.19	9.0	9.6	11.0
**	88.27	89.21	84.65	84.4	86.64	75.86	76.0	76.5	75.5
***	7.36	6.24	10.00	9.74	8.77	14.95	15.0	14.0	13.5

4b2. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.

All public reporting initiatives have the potential for unintended consequences, including gaming and risk aversion. We attempt to control the former through a careful audit process; 10% of STS Adult Cardiac Surgery Database participants were audited in 2019, as in each year since 2014. We control for risk aversion by having a robust methodology that appropriately adjusts the expected risk for providers who care for sicker patients.

4b2.2. Please explain any unexpected benefits from implementation of this measure.

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0114 : Risk-Adjusted Postoperative Renal Failure

0115 : Risk-Adjusted Surgical Re-exploration

0116 : Anti-Platelet Medication at Discharge

0117 : Beta Blockade at Discharge

0118 : Anti-Lipid Treatment Discharge
 0119 : Risk-Adjusted Operative Mortality for CABG
 0120 : Risk-Adjusted Operative Mortality for Aortic Valve Replacement (AVR)
 0121 : Risk-Adjusted Operative Mortality for Mitral Valve (MV) Replacement
 0122 : Risk-Adjusted Operative Mortality for Mitral Valve (MV) Replacement + CABG Surgery
 0123 : Risk-Adjusted Operative Mortality for Aortic Valve Replacement (AVR) + CABG Surgery
 0127 : Preoperative Beta Blockade
 0129 : Risk-Adjusted Postoperative Prolonged Intubation (Ventilation)
 0130 : Risk-Adjusted Deep Sternal Wound Infection
 0131 : Risk-Adjusted Stroke/Cerebrovascular Accident
 0134 : Use of Internal Mammary Artery (IMA) in Coronary Artery Bypass Graft (CABG)
 1501 : Risk-Adjusted Operative Mortality for Mitral Valve (MV) Repair
 1502 : Risk-Adjusted Operative Mortality for Mitral Valve (MV) Repair + CABG Surgery
 2514 : Risk-Adjusted Coronary Artery Bypass Graft (CABG) Readmission Rate
 2683 : Risk-Adjusted Operative Mortality for Pediatric and Congenital Heart Surgery

5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

The following additional related measures were not accessible with the search function in 5.1a. All of these measures are NQF endorsed.

2561 STS Aortic Valve Replacement (AVR) Composite Score
 2563 STS Aortic Valve Replacement (AVR) + Coronary Artery Bypass Graft (CABG) Composite Score
 3030 STS Individual Surgeon Composite Measure for Adult Cardiac Surgery
 3031 STS Mitral Valve Repair/Replacement (MVRR) Composite Score
 3032 STS MVRR + CABG Composite Score
 3294 STS Lobectomy for Lung Cancer Composite Score

5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications harmonized to the extent possible?

Yes

5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

N/A

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

N/A

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or

methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

Attachment **Attachment:** [0696_Appx2019-S4-S11-1b2-1b4-CABG_2007-09-18_Papers-4b1.pdf](#)

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): The Society of Thoracic Surgeons

Co.2 Point of Contact: Mark, Antman, mantman@sts.org, 312-202-5856-

Co.3 Measure Developer if different from Measure Steward: The Society of Thoracic Surgeons

Co.4 Point of Contact: Mark, Antman, mantman@sts.org, 312-202-5856-

Additional Information

Ad.1 Workgroup/Expert Panel involved in measure development

Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

The STS Quality Measurement Task Force (chaired by David Shahian, MD) is responsible for measure development. Members of the STS Task Force on Quality Initiatives provide clinical expertise as needed. The STS Workforce on National Databases meets at the STS Annual Meeting and reviews the measures on a yearly basis. Changes or updates to the measure will be at the recommendation of the Workforce.

Quality Measurement Task Force

David M. Shahian, MD, Chair; Massachusetts General Hospital & Harvard Medical School, Boston, MA

Diane Alejo; Johns Hopkins Univ., Baltimore, MD

Vinay Badhwar, MD; West Virginia University Hospitals, Morgantown, WV

Jordan Bloom, MD; Massachusetts General Hospital, Boston, MA

Michael Bowdish, MD; Torrance Memorial Medical Center, Los Angeles, CA

Joseph Cleveland, Jr., MD; University of Colorado Anschutz Medical Campus, Aurora, Co

Nimesh Desai, MD; Hospital of the University of Pennsylvania, Philadelphia, PA

James Edgerton, MD; Cardiac Surgery Specialists, Plano, TX

Fred Edwards, MD; University of Florida College of Medicine, Jacksonville, FL

Melanie Edwards, MD; Saint Joseph Mercy Health System, Ypsilanti, MI

Vic Ferraris, MD; University of Kentucky Medical Center, Lexington, KY

Anthony Furnary, MD; Providence Alaska Medical Center, Anchorage, AK

Joshua Goldberg, MD; Westchester Medical Center, Valhalla, NY

Jeffrey P. Jacobs, MD; All Children's Hospital/John Hopkins University, Saint Petersburg, FL

Marshall Jacobs, MD; Johns Hopkins Cardiac Surgery, Baltimore, MD

Karen Kim, MD; Univ. of Michigan Hospitals & Health Centers, Ann Arbor, MI

Benjamin Kozower, MD; Washington University School of Medicine, St. Louis, MO

Paul Kurlansky, MD; Columbia HeartSource/Columbia University Medical Center, New York, NY

Kevin Lobdell, MD; Atrium Health, Charlotte, NC

Mitchell Magee, MD; Southwest Cardiothoracic Surgeons, Dallas, TX

Gaetano Paone, MD; Henry Ford Hospital, Detroit, MI

J. Scott Rankin, MD; WVU Heart & Vascular Institute, West Virginia University, Morgantown, WV

Charles Schwartz, MD; St. Joseph Mercy Hospital, Pontiac, MI

Vinod Thourani, MD; MedStar Washington Hospital Center, Washington, DC

Christina Vassileva, MD; U Mass Memorial Medical Center, Worcester, MA

Moritz Wyler von Ballmoos, MD; Houston Methodist DeBakey Heart & Vascular Center, Houston, TX

Sean M. O'Brien, PhD; Duke Clinical Research Institute, Durham, NC

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released: 2007

Ad.3 Month and Year of most recent revision: 01, 2015

Ad.4 What is your frequency for review/update of this measure? Annual

Ad.5 When is the next scheduled review/update for this measure? 01, 2020

Ad.6 Copyright statement:

Ad.7 Disclaimers:

Ad.8 Additional Information/Comments: For completeness, several documents that were provided to the NQF Scientific Methods Panel for their October 2019 review of measure 0696 are included in the Appendix:

- Template Developer Response to SMP Prelim. Analysis (pg. 46-47)
- STS 2018 Adult Cardiac Surgery Risk Models: Part 1, Part 2 (pg. 48-65)
- STS CABG Composite for NQF Partial Update 2018 (pg. 66)