



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 subcriterion 1b).

Brief Measure Information

NQF #: 0126

Corresponding Measures:

De.2. Measure Title: Selection of Antibiotic Prophylaxis for Cardiac Surgery Patients

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

De.3. Brief Description of Measure: Percent of patients aged 18 years and older undergoing cardiac surgery who had an order for or received preoperative prophylactic antibiotics recommended for the operation.

1b.1. Developer Rationale: A devastating complication of cardiac surgery is deep sternal wound infection. Patients with deep sternal wound infection require multiple surgeries to clear the infection, have longer hospital stays, greatly increased costs and increased early and late mortality. Optimal selection and duration of prophylactic antibiotic therapy in cardiac surgery is necessary in the prevention of postoperative infection and death.

1. Edwards FH, Engelman RM, Houck P, Shahian DM, Bridges CR; Society of Thoracic Surgeons. The Society of Thoracic Surgeons Practice Guideline Series: Antibiotic Prophylaxis in Cardiac Surgery, Part I: Duration. *Ann Thorac Surg*. 2006 Jan;81(1):397-404. No abstract available. PMID: 16368422
2. Engelman R, Shahian D, Shemin R, Guy TS, Bratzler D, Edwards F, Jacobs M, Fernando H, Bridges C; Workforce on Evidence-Based Medicine, Society of Thoracic Surgeons. The Society of Thoracic Surgeons practice guideline series: Antibiotic prophylaxis in cardiac surgery, part II: Antibiotic choice. *Ann Thorac Surg*. 2007 Apr;83(4):1569-76. Review. No abstract available. PMID: 17383396
3. Braxton JH, Marrin CAS, McGrath PD, et al. 10-year follow-up of patients with and without mediastinitis. *Sem Thorac Cardiovasc Surg* 2004;16:70-6.
4. Demmy TL, Park SB, Liebler GA, et al. Recent experience with major sternal wound complications. *Ann Thorac Surg* 1990;49:458-62.
5. Tang GHL, Maganti M, Weisel RD, Borger MA. Prevention and management of deep sternal wound infection. *Sem Thorac Cardiovasc Surg* 2004;16:62-9.
6. American Society of Health-System Pharmacists. ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery; March 23, 2004. Available at www.ashp.org. Last accessed April 20, 2004.
7. CDC NNIS System. National nosocomial infections surveillance (NNIS) system report, data summary from January 1992 to June 2003, issued August 2003. *Am J Infect Control*. 2003;31:481-498.
8. Classen DC, Evans RS, Pestotnik SL, Horn SD, Menlove RL, Burke JP. The timing of prophylactic administration of antibiotics and the risk of surgical-wound infection. *N Engl J Med* 1992;326(5):281-286.

S.4. Numerator Statement: Number of patients undergoing cardiac surgery for whom there is documentation of an order for a first or second generation cephalosporin prophylactic antibiotic (e.g., cefazolin, cefuroxime, cefamandole), documentation that it is given preoperatively or in the event of a documented allergy an alternate antibiotic choice (e.g., vancomycin, clindamycin) is ordered and administered.

S.7. Denominator Statement: Number of patients undergoing cardiac surgery

S.10. Denominator Exclusions: List of exclusions is consistent with SCIP exclusions. This list is provided in the STS Adult Cardiac Surgery Database Data Manager's Training Manual as acceptable exclusions.

De.1. Measure Type: Process

S.23. Data Source: Registry Data

S.26. Level of Analysis: Clinician : Group/Practice, Facility

IF Endorsement Maintenance – Original Endorsement Date: May 09, 2007 **Most Recent Endorsement Date:** Jan 31, 2012

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? N/A

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 subcriteria to pass this criterion and be evaluated against the remaining criteria.**

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

[1a._Evidence_-_0126_Selection_of_ABX_Prophylaxis_.docx](#)

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., the benefits or improvements in quality envisioned by use of this measure)

A devastating complication of cardiac surgery is deep sternal wound infection. Patients with deep sternal wound infection require multiple surgeries to clear the infection, have longer hospital stays, greatly increased costs and increased early and late mortality. Optimal selection and duration of prophylactic antibiotic therapy in cardiac surgery is necessary in the prevention of postoperative infection and death.

1. Edwards FH, Engelman RM, Houck P, Shahian DM, Bridges CR; Society of Thoracic Surgeons. The Society of Thoracic Surgeons Practice Guideline Series: Antibiotic Prophylaxis in Cardiac Surgery, Part I: Duration. *Ann Thorac Surg*. 2006 Jan;81(1):397-404. No abstract available. PMID: 16368422
2. Engelman R, Shahian D, Shemin R, Guy TS, Bratzler D, Edwards F, Jacobs M, Fernando H, Bridges C; Workforce on Evidence-Based Medicine, Society of Thoracic Surgeons. The Society of Thoracic Surgeons practice guideline series: Antibiotic prophylaxis in cardiac surgery, part II: Antibiotic choice. *Ann Thorac Surg*. 2007 Apr;83(4):1569-76. Review. No abstract available. PMID: 17383396
3. Braxton JH, Marrin CAS, McGrath PD, et al. 10-year follow-up of patients with and without mediastinitis. *Sem Thorac Cardiovasc Surg* 2004;16:70–6.
4. Demmy TL, Park SB, Liebler GA, et al. Recent experience with major sternal wound complications. *Ann Thorac Surg* 1990;49:458–62.
5. Tang GHL, Maganti M, Weisel RD, Borger MA. Prevention and management of deep sternal wound infection. *Sem Thorac Cardiovasc Surg* 2004;16:62–9.
6. American Society of Health-System Pharmacists. ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery; March 23, 2004. Available at www.ashp.org. Last accessed April 20, 2004.
7. CDC NNIS System. National nosocomial infections surveillance (NNIS) system report, data summary from January 1992 to June 2003, issued August 2003. *Am J Infect Control*. 2003;31:481-498.
8. Classen DC, Evans RS, Pestotnik SL, Horn SD, Menlove RL, Burke JP. The timing of prophylactic administration of antibiotics and the risk of surgical-wound infection. *N Engl J Med* 1992;326(5):281-286.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for endorsement maintenance. 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 included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.

[Please see 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 endorsement maintenance. 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 subcriterion on improvement (4b.1) under Usability and Use.

Even though the measure is used to measure participant-level results, we understand it is of interest to see whether disparity exists between race and sex groups. We provide below the participant level distribution of the measure by race, ethnicity and sex.

Distribution of participant-specific observed rate in July 2012 - June 2013 and July 2011 - June 2012, by sex

| Distribution | Male July 11 - June 12 | | Male July 12 - June 13 | | Female July 11 - June 12 | | Female July 12 - June 13 | |
|---------------|------------------------|--------|------------------------|-------|--------------------------|--|--------------------------|--|
| # Participant | 1014 | 1007 | 1007 | 1010 | | | | |
| # Operations | 178335 | 175843 | 83554 | 81342 | | | | |
| Mean | 0.99 | 0.99 | 0.99 | 0.99 | | | | |
| STD | 0.059 | 0.038 | 0.055 | 0.049 | | | | |
| IQR | 0.0083 | 0.004 | 0.0046 | 0.00 | | | | |
| 0% | 0.00 | 0.44 | 0.039 | 0.32 | | | | |
| 10% | 0.97 | 0.99 | 0.969 | 0.98 | | | | |
| 20% | 0.99 | 0.99 | 0.990 | 1.00 | | | | |
| 30% | 0.99 | 1.00 | 1.000 | 1.00 | | | | |
| 40% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 50% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 60% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 70% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 80% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 90% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |
| 100% | 1.00 | 1.00 | 1.000 | 1.00 | | | | |

Distribution of participant-specific observed rate in July 2012 - June 2013 and July 2011 - June 2012, by race

| Distribution | White July 11 - June 12 | | White July 12 - June 13 | | Black July 11 - June 12 | | Black July 12 - June 13 | | Other July 11 - June 12 | | Other July 12 - June 13 | |
|---------------|-------------------------|--------|-------------------------|-------|-------------------------|-------|-------------------------|--|-------------------------|--|-------------------------|--|
| # Participant | 1014 | 1009 | 895 | 896 | 922 | 912 | | | | | | |
| # Operations | 225612 | 220268 | 19817 | 19494 | 16581 | 17294 | | | | | | |
| Mean | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | | | | | | |
| STD | 0.06 | 0.045 | 0.066 | 0.071 | 0.085 | 0.047 | | | | | | |
| IQR | 0.0077 | 0.0042 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | |
| 0% | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.24 | | | | | | |
| 10% | 0.97 | 0.99 | 0.99 | 1.00 | 0.99 | 1.00 | | | | | | |
| 20% | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 30% | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 40% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 50% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 60% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 70% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 80% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 90% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| 100% | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |

Distribution of participant-specific observed rate in July 2012 - June 2013 and July 2011 - June 2012, by ethnicity

| Distribution | Hispanic ethnicity July 11 - June 12 | | Hispanic ethnicity July 12 - June 13 | | Non-hispanic ethnicity July 11 - June 12 | | Non-hispanic ethnicity July 12 - June 13 | |
|---------------|--------------------------------------|-------|--------------------------------------|--------|------------------------------------------|--|------------------------------------------|--|
| # Participant | 858 | 840 | 1012 | 1010 | | | | |
| # Operations | 14149 | 14154 | 247826 | 243130 | | | | |
| Mean | 0.99 | 0.99 | 0.99 | 0.99 | | | | |
| STD | 0.068 | 0.065 | 0.06 | 0.046 | | | | |
| IQR | 0.00 | 0.00 | 0.0082 | 0.0043 | | | | |

| | | | | |
|------|------|------|------|------|
| 0% | 0.00 | 0.00 | 0.00 | 0.33 |
| 10% | 1.00 | 1.00 | 0.97 | 0.98 |
| 20% | 1.00 | 1.00 | 0.99 | 0.99 |
| 30% | 1.00 | 1.00 | 0.99 | 1.00 |
| 40% | 1.00 | 1.00 | 1.00 | 1.00 |
| 50% | 1.00 | 1.00 | 1.00 | 1.00 |
| 60% | 1.00 | 1.00 | 1.00 | 1.00 |
| 70% | 1.00 | 1.00 | 1.00 | 1.00 |
| 80% | 1.00 | 1.00 | 1.00 | 1.00 |
| 90% | 1.00 | 1.00 | 1.00 | 1.00 |
| 100% | 1.00 | 1.00 | 1.00 | 1.00 |

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.

N/A

1c. High Priority (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

1c.1. Demonstrated high priority aspect of healthcare

Affects large numbers, Frequently performed procedure, A leading cause of morbidity/mortality, High resource use, Severity of illness, Patient/societal consequences of poor quality

1c.2. If Other:

1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.

List citations in 1c.4.

A devastating complication of cardiac surgery is deep sternal wound infection (mediastinitis). This complication invariably involves an additional operation, a prolonged hospitalization, a significant toll in clinical resources, and dramatically increased costs. Anyone who has provided care for a patient with mediastinitis also knows well the emotional cost not only for the patient but also for the family, the nursing staff, and the surgeons. Truly one of the most devastating infections in all of surgery, this dreaded complication influences the perioperative management strategy of virtually all cardiothoracic surgeons. The incidence of postoperative mediastinitis can be decreased by assuring that all eligible patients undergoing cardiac surgery receive appropriate prophylactic antibiotics recommended for the operation.

1c.4. Citations for data demonstrating high priority provided in 1a.3

1. Edwards FH, Engelman RM, Houck P, Shahian DM, Bridges CR; Society of Thoracic Surgeons. The Society of Thoracic Surgeons Practice Guideline Series: Antibiotic Prophylaxis in Cardiac Surgery, Part I: Duration. *Ann Thorac Surg*. 2006 Jan;81(1):397-404. No abstract available. PMID: 16368422
2. Engelman R, Shahian D, Shemin R, Guy TS, Bratzler D, Edwards F, Jacobs M, Fernando H, Bridges C; Workforce on Evidence-Based Medicine, Society of Thoracic Surgeons. The Society of Thoracic Surgeons practice guideline series: Antibiotic prophylaxis in cardiac surgery, part II: Antibiotic choice. *Ann Thorac Surg*. 2007 Apr;83(4):1569-76. Review. No abstract available. PMID: 17383396
3. Braxton JH, Marrin CAS, McGrath PD, et al. 10-year follow-up of patients with and without mediastinitis. *Sem Thorac Cardiovasc Surg* 2004;16:70-6.
4. Demmy TL, Park SB, Liebler GA, et al. Recent experience with major sternal wound complications. *Ann Thorac Surg* 1990;49:458-62.
5. Tang GHL, Maganti M, Weisel RD, Borger MA. Prevention and management of deep sternal wound infection. *Sem Thorac Cardiovasc Surg* 2004;16:62-9.
6. American Society of Health-System Pharmacists. ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery; March 23, 2004. Available at www.ashp.org. Last accessed April 20, 2004.
7. CDC NNIS System. National nosocomial infections surveillance (NNIS) system report, data summary from January 1992 to

June 2003, issued August 2003. Am J Infect Control. 2003;31:481-498.

8. Classen DC, Evans RS, Pestotnik SL, Horn SD, Menlove RL, Burke JP. The timing of prophylactic administration of antibiotics and the risk of surgical-wound infection. N Engl J Med 1992;326(5):281-286.

1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)

N/A

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 subcriteria 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

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.)

http://www.sts.org/sites/default/files/documents/STSAultCVDDataCollectionForm2_73_Annotated.pdf

[;http://www.sts.org/sites/default/files/documents/word/STSAultCVDDataSpecificationsV2_73%20with%20correction.pdf](http://www.sts.org/sites/default/files/documents/word/STSAultCVDDataSpecificationsV2_73%20with%20correction.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)

No data dictionary Attachment:

S.3. For endorsement maintenance, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

Documentation of an order is now also acceptable for this measure; addition made to harmonize with other measures

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)

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

Number of patients undergoing cardiac surgery for whom there is documentation of an order for a first or second generation cephalosporin prophylactic antibiotic (e.g., cefazolin, cefuroxime, cefamandole), documentation that it is given preoperatively or in the event of a documented allergy an alternate antibiotic choice (e.g., vancomycin, clindamycin) is ordered and administered.

S.5. Time Period for Data (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

Denominator – 12 months

| |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>S.6. Numerator Details <i>(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, 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)</i> <u>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.</u> Number of cardiac surgery procedures in which appropriate antibiotic selection (AbxSelect) is marked “yes”</p> |
| <p>S.7. Denominator Statement <i>(Brief, narrative description of the target population being measured)</i> Number of patients undergoing cardiac surgery</p> |
| <p>S.8. Target Population Category <i>(Check all the populations for which the measure is specified and tested if any):</i> Elderly</p> |
| <p>S.9. Denominator Details <i>(All information required to identify and calculate the target population/denominator such as definitions, 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)</i> Number of cardiac surgery procedures; the SQL code used to create the function used to identify cardiac procedures is provided in the appendix.</p> |
| <p>S.10. Denominator Exclusions <i>(Brief narrative description of exclusions from the target population)</i> List of exclusions is consistent with SCIP exclusions. This list is provided in the STS Adult Cardiac Surgery Database Data Manager’s Training Manual as acceptable exclusions.</p> |
| <p>S.11. Denominator Exclusion Details <i>(All information required to identify and calculate exclusions from the denominator such as definitions, 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)</i> AbxSelect is marked “Exclusion”</p> |
| <p>S.12. Stratification Details/Variables <i>(All information required to stratify the measure results including the stratification variables, definitions, 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 with at S.2b)</i> N/A</p> |
| <p>S.13. Risk Adjustment Type <i>(Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)</i> No risk adjustment or risk stratification If other:</p> |
| <p>S.14. Identify the statistical risk model method and variables <i>(Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)</i> N/A</p> |
| <p>S.15. Detailed risk model specifications <i>(must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)</i> Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.</p> |
| <p>S.15a. Detailed risk model specifications <i>(if not provided in excel or csv file at S.2b)</i></p> |
| <p>S.16. Type of score: Rate/proportion If other:</p> |

S.17. 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.18. Calculation Algorithm/Measure Logic (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; aggregating data; risk adjustment; etc.)

Please refer to numerator and denominator sections for detailed information.

S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment (You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

No diagram provided

S.20. Sampling (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

N/A

S.21. Survey/Patient-reported data (If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

N/A

S.22. Missing data (specify how missing data are handled, e.g., imputation, delete case.)

Required for Composites and PRO-PMs.

Cases with missing data are removed from the calculation of this measure and % missing is reported to the participant

S.23. Data Source (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.24.

Registry Data

S.24. Data Source or Collection Instrument (Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)

IF a PRO-PM, identify the specific PROM(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 will go live on July 1, 2014.

S.25. 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

S.26. Level of Analysis (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Clinician : Group/Practice, Facility

S.27. Care Setting (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Inpatient/Hospital

If other:

S.28. 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.)

N/A

2a. Reliability – See attached Measure Testing Submission Form

2b. Validity – See attached Measure Testing Submission Form

2.1_Testing_-_0126_Selection_of_ABX_Prophylaxis.4.10.14.docx

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*)

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.

The STS Adult Cardiac Surgery Database has more than 1,000 participants, 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.

No feasibility assessment 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. Describe what you have learned/modified 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 a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.

Documentation of an order is now acceptable for this measure; addition made to harmonize with other measures. 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 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 \$3,200 or \$4,000, depending on whether participants are STS members (or whether the majority of surgeons in a group are STS members). As a benefit of STS membership, STS members are charged the lesser of the two fees.

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.

| Planned | Current Use (for current use provide URL) |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Quality Improvement (Internal to the specific organization) STS Adult Cardiac Surgery Database http://www.sts.org/sts-national-database/database-managers/adult-cardiac-surgery-database |

4a.1. For each CURRENT use, checked above, provide:

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

See above and 4b.1 below.

4a.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?)

Measure 0268 Perioperative Care: Selection of Prophylactic Antibiotic: First OR Second Generation Cephalosporin, which appears to capture the same numerator for all surgical patients, is included in PQRS.

4a.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

4b. 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.

4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (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

Please see 1b.2 and 1b.4.

July 2011 to June 2012

| id | Midwest | Northeast | Other region | South | West |
|---------------|---------|-----------|--------------|--------|-------|
| # Participant | 304 | 132 | 3 | 367 | 207 |
| % Participant | 30.0% | 13.0% | 0.3% | 36.2% | 20.4% |
| # Operation | 68584 | 46873 | 851 | 100534 | 45205 |
| % Operation | 26.2% | 17.9% | 0.3% | 38.4% | 17.3% |

July 2012 to June 2013

| id | Midwest | Northeast | Other region | South | West |
|---------------|---------|-----------|--------------|-------|-------|
| # Participant | 301 | 129 | 5 | 366 | 208 |
| % Participant | 29.8% | 12.8% | 0.5% | 36.3% | 20.6% |
| # Operation | 67791 | 45050 | 1042 | 98029 | 45290 |
| % Operation | 26.4% | 17.5% | 0.4% | 38.1% | 17.6% |

4b.2. 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.

N/A

4c. 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).

4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.

We are not aware of any unintended negative consequences.

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)

0268 : Perioperative Care: Selection of Prophylactic Antibiotic: First OR Second Generation Cephalosporin

0528 : Prophylactic Antibiotic Selection for Surgical Patients

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

5a. Harmonization

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 completely harmonized?

No

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

Data sources are different (i.e., our measure is collected in the STS Adult Cardiac Surgery Database, a reputable clinical registry established in 1989), and the target population for our measure is specific to cardiac surgery.

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.)

Please see above

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: [0126_Selection_of_ABX_Prophylaxis_Appendix_-_S.9.-_1b.2.pdf](#)

Contact Information

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

Co.2 Point of Contact: [Jane, Han, jhan@sts.org, 312-202-5856-](#)

Co.3 Measure Developer if different from Measure Steward: [The Society of Thoracic Surgeons](#)

Co.4 Point of Contact: [Jane, Han, jhan@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.

[STS Quality Measurement Task Force responsible for measure development. Roster available upon request.](#)

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released: [2004](#)

Ad.3 Month and Year of most recent revision: [03, 2014](#)

Ad.4 What is your frequency for review/update of this measure? [annually](#)

Ad.5 When is the next scheduled review/update for this measure? [2015](#)

Ad.6 Copyright statement:

Ad.7 Disclaimers:

Ad.8 Additional Information/Comments: