THE SOCIETY OF THORACIC SURGEONS

633 N. SAINT CLAIR STREET, SUITE 2320
CHICAGO, ILLINOIS 60611-3658
Phone: 312/202-5800
Fax: 312/202-5801
E-mail: sts@sts.org
Web: http://www.sts.org

April 26, 2010

The National Quality Forum
601 Thirteenth Street NW
Suite 500 North
Washington, DC 20005

Re: NQF Patient Outcomes Steering Committee Discussion on April 20, 2010 – STS Response

Dear Steering Committee Members:

During your meeting on April 20, 2010, a number of concerns were expressed regarding The Society of Thoracic Surgeons (STS) CABG Composite Score (OT1-013-09). Unfortunately, time constraints made it impossible for STS to respond to each concern in detail. Thus, on behalf of STS, we would like to take this opportunity to provide responses to the main questions raised regarding the STS composite measure. Please see below:

1. Concern that exclusion and inclusion criteria for NQF-endorsed component measures of the STS composite were not provided

   STS Response:
   The exclusion and inclusion criteria are included in each composite report to STS Adult Cardiac Surgery Database participants. The table describing these criteria, taken directly from our standard report, is provided below in Appendix A.

2. Dissatisfaction with the 99% Bayesian certainty criterion for star rating was expressed

   STS Response:
   Numerical performance scores, including point estimates and confidence intervals for the participant as well as overall STS scores and percentiles, are routinely calculated and provided in STS' standard reports. Unfortunately, the vast majority of consumers would not understand how to correctly interpret these data. It was for this reason that we designed the one, two and three star rating system. We tested various Bayesian probabilities to determine one and three star rating categories, ultimately deciding on 99%. This strict criterion assures that programs designated as one- or three-star have unequivocally different performance from the STS average. On the other hand, it has consistently produced about 10-15% one-star and 10-15% three-star programs each harvest period. This is an order of magnitude higher number of low and high outlier programs than could be identified using risk-adjusted mortality alone, and it is also a far greater percentage of outliers than identified in any credible CABG public reporting system of which we are aware. Finally, as shown in Appendix B, the star ratings (which

correspond to low, mid, and high in the Figure) correlate well with actual clinical performance in each of the component domains of the composite.

We believe the currently constructed star system is clinically meaningful; it protects providers from spurious identification as low outliers; it prevents programs from being designated as three-star unless they are truly superior; it correctly identifies more programs as low or high outliers than any other system of which we are aware; and it provides a readily comprehensible single rating for consumers.

We believe that it would be unwise to endorse our overall methodology and numerical score but not our star rating, which is an integral part of our methodology. NQF may not have endorsed such a comprehensive approach to both measurement and performance rating before, but we believe this is a logical evolutionary step for NQF and STS, particularly given our long history of data collection and performance measurement. Finally, we are concerned that publishing only numerical scores could have unintended negative consequences. Without our consent or input, external entities could construct their own performance rating systems that would not be justified by the data underlying our scores.

3. Concern regarding temporal shifts in star ratings

STS Response:
One member of the Committee was concerned that about 50% of one- and three-star programs changed their star ratings over the course of a year. The information on which that concern is based is found in Appendix C.

First, our 99% Bayesian probability criterion is strict, as noted above. One must truly be statistically quite different from the average STS performer to receive one or three stars. The fact that many programs move from the one- and three-star categories to the average two-star category is not unexpected—small differences in performance over the course of a year may account for this, especially for providers that are right on the borderline between two-star and either one- or three-star performance. A much smaller percentage of programs move from being average to being one or three stars, at less than 10% each. Notably, virtually no providers move from one to three or three to one stars. Such dramatic short-term changes in performance rating would be of concern, suggesting instability of our methodology.

4. Concern that consumers would misinterpret one, two, and three stars as being *Good, Better*, and *Best*, respectively

STS Response:
As exemplified in Appendix D, which was also included in our submission, we have always indicated that one-star programs are performing below the STS average. The key to avoiding consumer misinterpretation of this or any other performance rating system is to provide clear explanations. In our discussions with Consumers Union regarding our collaborative public reporting initiative, both parties have agreed completely on the importance of extensive educational content to clarify the correct interpretation of our rating system.

Please do not hesitate to contact Jane Han, STS Manager of Quality Initiatives, at jhan@sts.org or (312) 202-5856, with any questions you may have. Thank you for your time and consideration.

Sincerely,

David M. Shahian, MD
Chair, STS Workforce on National Databases
Chair, STS Quality Measurement Task Force

Fred H. Edwards, MD
Chair, STS Council on Quality, Research, and Patient Safety Operating Board

Frederick L. Grover, MD
Immediate Past Chair, STS Council on Quality, Research, and Patient Safety Operating Board

cc: Reva Winkler, MD, MPH, Program Consultant
Heidi Bossley, MSN, MBA, Senior Director, Performance Measures
Hawa Camara, Research Analyst
Sarah Fanta, Research Analyst, Performance Measures

Appendix A

Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2009

Table 2. STS Implementation of the NQF Measures – Updated 4/3/2009

MEASURE	STS implementation	Comments
1. Participation in a Systematic Database for Cardiac Surgery *"Does the facility participate in a multicenter data collection and feedback program that provides benchmarking relative to peers and uses process and outcome measures?"*	Not reported.	NOTE: All report recipients participate in a systematic database for cardiac surgery (STS).
2. Surgical Volume: a. Isolated CABG b. Valve Surgery c. Valve+CABG Surgery *"Annual procedural volume of three surgeries: isolated CABG surgery, valve surgery, and valve+CABG surgery"*	a. Isolated CABG (Same population definition as in the STS harvest report – see Table 9 of the Report Overview). Variables used: CABG (OpCab)[1] b. Valve Surgery – Any mitral, aortic, tricuspid, or pulmonary valve surgery without a CABG. Variables used: Mitral valve surgery (OpMitral), Aortic valve surgery (OpAortic), Triscupid valve surgery (OpTricus), Pulmonary valve surgery (OpPulm) c. CABG + Valve Surgery – Any mitral, aortic, tricuspid, or pulmonary valve surgery with a CABG Variables used: Mitral valve surgery (OpMitral), Aortic valve surgery (OpAortic), Triscupid valve surgery (OpTricus), Pulmonary valve surgery (OpPulm), and CABG (OpCab)	NOTE: NQF procedure groups determined by ICD-9 code. STS does not collect ICD-9 codes.
3. Timing of Antibiotic Administration for Cardiac Surgery Patients *"Percent of patients undergoing cardiac surgery who received prophylactic antibiotics within one hour of surgical incision (two hours if receiving vancomycin)."*	Not reported	NOTE: STS began collecting information on antibiotic administration with data version 2.61 but will not report on this measure until at least 2009.

Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2009

4. Selection of Antibiotic Administration for Cardiac Surgery Patients *"Percent of patients undergoing cardiac surgery who received prophylactic antibiotics recommended for the operation."*	Not reported	NOTE: STS began collecting information on antibiotic administration with data version 2.61 but will not report on this measure until at least 2009.
5. Pre-operative Beta Blockade *"Percent of patients undergoing isolated CABG who received beta blockers within 24 hours preceding surgery."*	• Procedure: Isolated CABG • Variable used: Meds-Beta Blockers (MedBeta) • Numerator: Number of Isolated CABG procedures in which (MedBeta) is marked as 'Yes' • Denominator: Total number of Isolated CABG procedures excluding those in which (MedBeta) is marked as 'Contraindicated/Not indicated'	NOTE: STS began collecting information on whether medications were contraindicated/not indicated with data version 2.61. Beginning with 2008 harvest 3 these cases are removed from the denominator.
6. Use of Internal Mammary Artery (IMA). *"Percent of patients undergoing isolated CABG who received an IMA graft."*	• Procedure: Isolated CABG • Variable: IMA Artery Used (IMAArtUs) • Numerator: Number of Isolated CABG procedures in which (IMAArtUs) is marked as 'Left IMA', 'Right IMA', or 'Both IMAs' • Denominator: Number Isolated CABG excluding repeat CABG (PrCAB)	NOTE: NQF population definition and exclusions are based on ICD-9 codes. STS does not currently collect ICD-9 codes. NOTE: The NQF exclusion of other heart procedures is obtained during STS implementation by definition of the isolated CABG group (See Table 9 of the Report Overview).
7. Duration of Prophylaxis for Cardiac Surgery Patients *"Percent of patients undergoing cardiac surgery who prophylactic antibiotics were discontinued within 24 hours after surgery end time."*	Not reported	NOTE: STS does not currently collect information on antibiotic administration.

Appendix A

Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2009

8. Prolonged Intubation (ventilation). *"Percent of patients undergoing isolated CABG (without pre-existing intubation/tracheostomy) who require intubation for more than 24 hours."*	• Procedure: Isolated CABG • Variable: Complications-Pulmonary_Vent Prolonged (CPVntLng) • Numerator: Number of Isolated CABG procedures in which (CPVntLng) is marked as 'Yes' • Denominator: Total number of Isolated CABG procedures • Risk adjustment: Yes[2]	NOTE: STS does not collect data on the NQF exclusion of intubation/tracheostomy prior to isolated CABG.
9. Deep Sternal Wound Infection Rate. *"Percent of patients undergoing isolated CABG who developed deep sternal wound infection within 30 days post-operatively."*	• Procedure: Isolated CABG • Variable: Complications–Infection-Sternum-Deep (CIStDeep) • Numerator: Number of Isolated CABG procedures in which (CIStDeep) is marked as 'Yes' • Denominator: Total number of Isolated CABG procedure Risk adjustment: Yes	NOTE: Through data version 2.52.1 Deep Sternal Wound Infection Rate was only tracked up to discharge. Beginning with data version 2.61 this rate is being tracked for 30 days postoperatively. NOTE: STS does not currently collect information on pre-operative wound site infections and cannot apply the NQF exclusion.
10. Stroke/Cerebrovascular Accident. *"Percent of patients undergoing isolated CABG (without pre-existing neurologic deficit) who develop a post-operative neurologic deficit persisting greater than 72 hours."*	• Procedure: Isolated CABG • Variable: Complications – Neurologic-Stroke-Permanent (CNStrokP) • Numerator: Number of Isolated CABG procedures in which (CNStrokP) is marked as 'Yes' • Denominator: Number of Isolated CABG procedures excluding those with a prior CVA (CVA) • Risk adjustment: Yes	NOTE: STS implementation excludes patients with prior CVA. NQF has an exclusion for "neurologic deficits" that is not explicitly defined. NOTE: Beginning with data version 2.61, the STS definition includes deficits persisting greater than 24 hours.
11. Post-operative Renal Insufficiency. *"Percent of patients undergoing isolated CABG (without pre-existing renal failure) who develop post-operative renal failure or require dialysis."*	• Procedure: Isolated CABG • Variable: Complications-Renal_Renal Failure (CRenFail) • Numerator: Number of Isolated CABG procedures in which (CRenFail) is marked as 'Yes'. • Denominator: Number of Isolated CABG procedures excluding those with either or both of the following risk factors: Renal Failure (RenFail) for data version 2.52.1 or earlier, Dialysis (Dialysis) for data version 2.61 or later, Last Creatinine Level (CreatLst) > 2 • Risk adjustment: Yes	NOTE: Although both NQF and STS refer to the same underlying clinical definition, the NQF uses the label "renal insufficiency" and the STS uses the label "renal failure". For the purposes of this report the STS has labeled this measure "Post-operative renal insufficiency (failure)"
12. Surgical Re-exploration. *"Percent of patients undergoing isolated CABG who require a return to the operating room for bleeding/tamponade, graft occlusion, or other cardiac reason."*	• Procedure: Isolated CABG • Variables: Complications-Operative-ReOperation for Bleeding/Tamponade (COpReBld), Complications-Operative-ReOperation for Graft Occlusion (COpReGft), Complications-Operative-ReOperation for Other Cardiac Reasons (COpReOth), Complications-Operative-ReOperation for Valve Dysfunction (COpReVlv) • Numerator: Number of Isolated CABG procedures in which any of the variables above are marked 'Yes' • Denominator: Total number of Isolated CABG procedures • Risk adjustment: Yes	
13. Anti-platelet Medications at Discharge. *"Percent of patients undergoing isolated CABG who were discharged on aspirin/safety-coated aspirin or clopidogrel."*	• Procedure: Isolated CABG • Variables: For data version 2.41: Discharge Medications-Aspirin (DCASA) or Discharge Medications-Other Anti-platelets (DCAntplt) For data versions 2.52.1 and 2.61: Discharge Medications-Aspirin (DCASA) or Discharge Medications-ADP Inhibitors (DCADP) • Numerator: Number of Isolated CABG procedures in which any of the above variables are marked 'Yes' • Denominator: Number of Isolated CABG procedures excluding those that were submitted under STS data version 2.35, those that resulted in in-hospital mortalities based on the variables Mortality Discharge Status (MtDCStat), Mortality Date (MtDate), and Discharge Date (DischDt), and those submitted under STS data version 2.61 in which (DCASA or DCADP) is marked as 'Contraindicated/Not indicated'	NOTE: Although the NQF measure does not exclude patients who died in the hospital, the STS implementation does exclude in-hospital mortalities. NOTE: STS implementation excludes records collected under v2.35 when information on discharge anti-platelet medications was not collected. NOTE: STS began collecting information on whether medications were contraindicated/not indicated with data version 2.61. Beginning with 2008 harvest 3 these cases are removed from

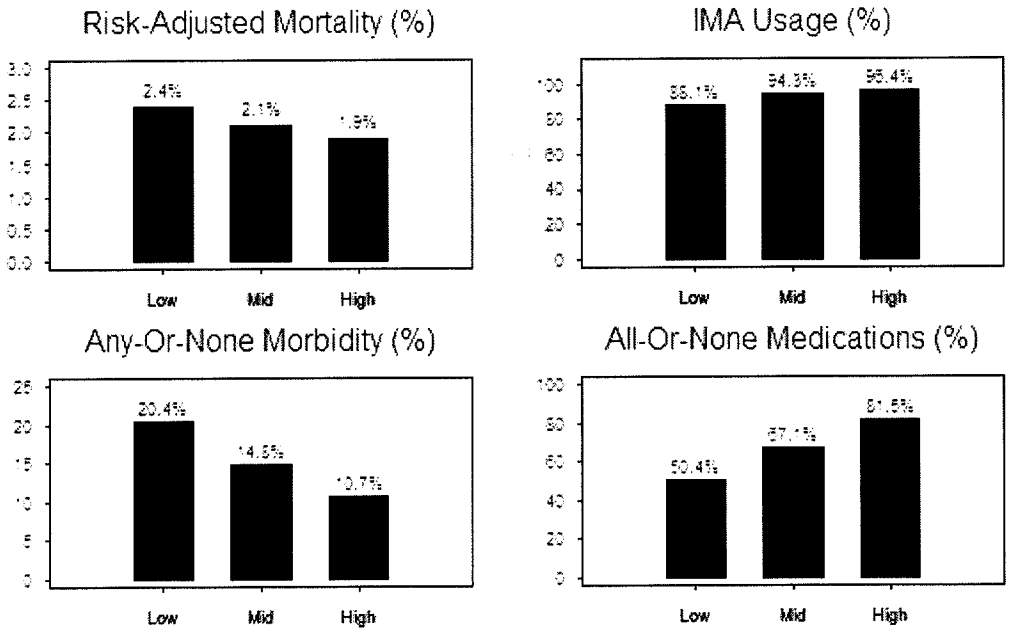
Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2009

		the denominator.
14. Beta Blockade at Discharge *"Percent of patients undergoing isolated CABG who were discharged on beta blockers."*	• Procedure: Isolated CABG • Variable: Discharge Medications-Beta Blockers (DCBeta) • Numerator: Number of Isolated CABG procedures in which (DCBeta) is marked 'Yes' • Denominator: Number of Isolated CABG procedures excluding those that were submitted under STS data version 2.35, those that resulted in in-hospital mortalities based on Mortality Discharge Status • (MtDCStat) and Mortality Date (MtDate), and those submitted under STS data version 2.61 in which (DCBeta) is marked as 'Contraindicated/Not indicated'	NOTE: Although the NQF measure does not exclude patients who died in the hospital, the STS implementation does exclude in-hospital mortalities. NOTE: STS implementation excludes records collected under v2.35 when information on discharge beta blockade was not collected. NOTE: STS began collecting information on whether medications were contraindicated/not indicated with data version 2.61. Beginning with 2008 harvest 3 these cases are removed from the denominator.
15. Anti-lipid Treatment at Discharge *"Percent of patients undergoing isolated CABG who were discharged on a statin or other pharmacologic lipid-lowering regimen."*	• Procedure: Isolated CABG • Variables: Discharge Medications-Lipid Lowering (DCLipid) • Numerator: Number of Isolated CABG procedures in which (DCLipid) is marked as 'Yes' • Denominator: Number of Isolated CABG procedures excluding those that were submitted under STS data version 2.35, those that resulted in in-hospital mortalities based on Mortality Discharge Status (MtDCStat), Mortality Date (MtDate), and Discharge Date (DischDt), and those submitted under STS data version 2.61 in which (DCLipid) is marked as 'Contraindicated/Not indicated'	NOTE: Although the NQF measure does not exclude patients who died in the hospital, the STS implementation does exclude in-hospital mortalities. NOTE: STS implementation excludes records collected under v2.35 when information on discharge anti-lipid medication was not collected. NOTE: STS began collecting information on whether medications were contraindicated/not indicated with data version 2.61. Beginning with 2008 harvest 3 these cases are removed from the denominator.
16. Risk-Adjusted Inpatient Operative Mortality for CABG.	• Population: Isolated CABG • Variable: In-hospital mortalities based on Mortality Discharge	NOTE: NQF population currently defined by CCMRP; STS population defined by

Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2009

"Percent of patients who die in hospital after CABG surgery."	Status (MtDCStat) and Mortality Date (MtDate) • Risk adjustment: Yes • Numerator: Number of Isolated CABG procedures with an in-hospital mortality • Denominator: Total number of Isolated CABG procedures	STS procedure groups (isolated CABG) and may not match CCMRP exclusions exactly.
17. Risk-Adjusted Operative Mortality for CABG *"Percent of patients undergoing isolated CABG who die, including both 1) all deaths occurring during the hospitalization in which the CABG was performed, even if after 30 days, and 2) those deaths occurring after discharge from the hospital, but within 30 days of the procedure."*	• Procedure: Isolated CABG • Variables: Operative mortality based on Mortality Operative Death (MtOpD), Mortality Status at 30 days (Mt30Stat), Mortality Date (MtDate), and Mortality Discharge Status (MtDCStat) • Numerator: Number of Isolated CABG procedures with an operative mortality • Denominator: Total number of Isolated CABG procedures • Risk adjustment: Yes	
18. Risk-Adjusted Operative Mortality for Aortic Valve Replacement (AVR) *"Percent of patients undergoing AVR who die, including both 1) all deaths occurring during the hospitalization in which the [procedure] was performed, even if after 30 days, and 2) those deaths occurring after discharge from the hospital, but within 30 days of the procedure."*	• Procedure: Isolated AV Replacement (Same population definition as in the STS harvest report – see Table 9 of the Report Overview) • Variables: Operative mortality based on Mortality Operative Death (MtOpD), Mortality Status at 30 days (Mt30Stat), Mortality Date (MtDate), and Mortality Discharge Status (MtDCStat) • Numerator: Number of Isolated AV Replacement procedures with an operative mortality • Denominator: Total number of Isolated AV Replacement procedures • Risk adjustment: Yes	
19. Risk-Adjusted Operative Mortality for Mitral Valve Replacement/Repair (MVR) *"Percent of patients undergoing MVR who die, including both 1) all deaths occurring during the hospitalization in which the [procedures] was performed, even if after 30 days, and 2) those deaths occurring after discharge from the hospital,*	• Procedure: Isolated MV Replacement (Same population definition as in the STS harvest report – see Table 9 of the Report Overview) • Variables: Operative mortality based on Mortality Operative Death (MtOpD), Mortality Status at 30 days (Mt30Stat), Mortality Date (MtDate), and Mortality Discharge Status (MtDCStat) • Numerator: Number of Isolated MV Replacement procedures	NOTE: Although the NQF lists the STS as the source for this measure, their population definition does not match current STS population definitions. STS implementation excludes MV repair patients because STS risk adjustment only exists

Appendix B


Risk-Adjusted Mortality (%)
2.4%
2.1%
1.9%
Low
Mid
High
IMA Usage (%)
88.1%
94.3%
95.4%
Low
Mid
High
Any-Or-None Morbidity (%)
20.4%
14.5%
10.7%
Low
Mid
High
All-Or-None Medications (%)
50.4%
67.1%
81.5%
Low
Mid
High

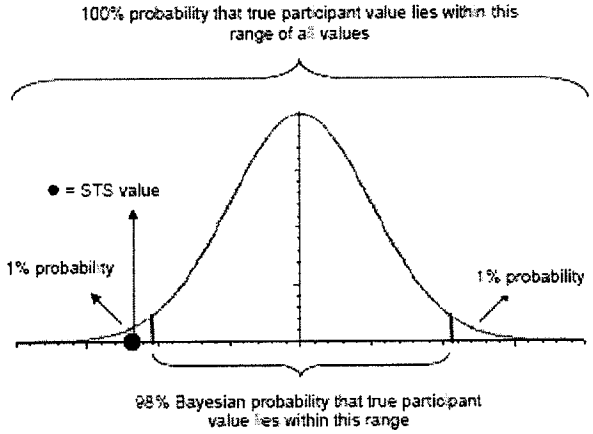
Appendix C

Table 3. Change in star ratings between 1st and 4th harvests periods

Spring 2007	Fall 2008		
	1	2	3
	N	N	N
1	44	44	1
2	31	434	46
3	1	51	54

Appendix D

Report Overview
STS Composite Quality Rating and NQF Measures
STS Report – Period Ending 06/30/2008



Column 3. STS Mean Participant Score. The STS mean participant score is the average of all scores across all of the participants in the analysis. This score serves as a useful benchmark for assessing a participant's performance relative to the overall STS performance.

Column 4. Participant Rating. The participant rating system assigns participants to rating categories designated by one, two, or three stars. The rating categories are defined as follows:

★★★ → Participant performance is significantly higher than STS mean.

★★ → Participant performance is not statistically different from STS mean.

★ → Participant performance is significantly lower than STS mean.