

The Society of Thoracic Surgeons

Adult Cardiac Surgery Database Audit

2025



Purpose of the Audit

- To assure that the data collected at facilities are valid, therefore attesting to the integrity of the STS Adult Cardiac Surgery Database
- To examine the accuracy, consistency, and completeness of data
- To provide education to the sites
- Affords an opportunity to identify variability in data collection so STS can share best practices, improve data definitions, and enhance training manuals and other educational offerings
- Audit results drive education for our webinars and content provided at AQO



Site Selection for Audit

- 10% of participating sites are selected for audit
- 100 ACSD sites selected in 2025
- Primary Data and File Contact and Surgeon Representative receive the audit notification via email from STS
 - These two contacts will also receive the results at the end of the audit season
- Participating sites are removed from the audit selection pool for 3 years after completing an audit that meets expectations according to the STS National Database Audit Policy
- STS reserves the right to utilize various methodologies, including random and targeted selection
 - Targeted audits may be scheduled if requested by a participant or deemed appropriate by STS



Who Will Perform the Audit?

- Healthcare Management Solutions, LLC (HMS) will perform an independent, external audit of the STS Adult Cardiac Surgery Database
- HMS is HIPAA compliant and will conduct audits adhering to strict security policies in accordance with our Business Associate Agreement (BAA) and Sub-Business Agreement with STS
- HMS is covered as an affiliate under the BAA you entered STS as part of your participation in the Database, so a separate BAA is not needed.
- All data files received are stored on an encrypted secure server at HMS



Adult Cardiac Audit

- Fill out the [STS ACSD Data Collection Questionnaire](#)
- Healthcare Management Solutions, LLC (HMS) will perform the audit on a total of 20 isolated coronary artery bypass graft (CABG), isolated Valve or Valve + CABG cases performed between January 1, 2024 – December 31, 2024, submitted using Version 4.20
 - For each case we will look at 125 variables
- HMS will perform the audit on a total of 5 aorta cases performed between January 1, 2024 – December 31, 2024, submitted using Version 4.20
 - For each case we will look at 13 variables
- HMS will review the site's OR-generated case log with the cases submitted to IQVIA.
 - This will be for a randomly selected 3-month period



STS National Database Audit Policy

- A final Summary Report will be emailed by STS to each site. The rate of agreement and data completeness will be considered when evaluating each site and identifying sites that do not meet the STS expectations.
- Your report will show variable accuracy, section accuracy, and overall accuracy.
- Please make sure that your submitted files are complete and accurate. Verification of 30-day mortality status is required to be submitted to the audit company.
 - This includes any tracking logs or EHR documentation used to code the 30-day status, readmission, and surgical site infection within 30 days fields (Mt30Stat (seq 7001), Readmit (seq 7140), and SurSInf (seq 6690)).



STS National Database Audit Policy

- **Variable accuracy (agreement)** will be measured for each audited variable. The denominator will equal the total number of records audited. The numerator will show the number of records where that variable was a mismatch. This will be reported back as a percentage to sites.
- **Section accuracy (agreement)** will be measured for each section (i.e., demographics, risk factors, complications, discharge, mortality, etc.).
- **Overall site accuracy (agreement)** will be measured for each site as an overall agreement rate. The denominator will equal the total number of records audited. The numerator will show the number of records where that variable was a mismatch. This will be reported back as a percentage to sites.



STS National Database Audit Policy

- For **Overall Variables:**
- 98.0% or greater is defined as a site that exceeds expectations
- 90.0% to 97.9% is defined as a site that meets expectations
- A site achieving less than 89.9% is defined as a site that does not meet expectations and will require a re-audit within two years



Audit Policy – Overall Variables

Demographics	
65	DOB
70	Age
75	Gender
151	RaceMulti
185	Ethnicity
Hospitalization	
291	PayorPrim
298	PayorSecond
305	AdmitDt
310	SurgDt

Previous Cardiac Interventions	
670	PrCAB
675	PrValve
775	POCPCI
780	POCPCIWhen
800	POCPCIIn
805	POC

Risk Factors	
330	HeightCm
335	WeightKg
355	FHCAD
360	Diabetes
365	DiabCtrl
375	Dialysis
380	Hypertn
385	InfEndo
390	InfEndTy
400	TobaccoUse
405	ChrLungD
450	HmO2
460	SlpApn
465	Pneumonia
470	IVDrugAb
480	Alcohol
485	LiverDis
492	ImmSupp
495	MediastRad
500	Cancer
505	PVD
512	UnrespStat
515	Syncope
525	CVD
530	CVA
535	CVAWhen
540	CVDITIA
550	CVDStenRt
555	CVDStenLft
560	CVDPCarSurg
565	WBC
575	Hct
580	Platelets
605	CreatLst



Audit Policy – Overall Variables

Preoperative Cardiac Status	
890	MIWhen
895	CardSympTimeOfAdm
912	HeartFailTmg
915	ClassNYH
930	CarShock
935	Resusc
955	ArrhythSSS
960	ArrhythAFlutter
961	ArrhythAtrFib
965	ArrhythSecond
970	ArrhythThird
971	ArrhythAFib
Preoperative Medications	
1020	MedACEI48
1030	MedBeta
1060	MedADP5Days
1065	MedADPIDis
1073	MedGP
1130	MedInotr
1143	MedSter

Hemodynamics/Cath/Echo	
1170	NumDisV
1174	StenLeftMain
1178	LADDistSten
1545	HDEF (+/-5% for audit only)
1590	VDInsufA
1600	VDStenA
1646	VDAoPrimEt
1680	VDInsufM
1690	VDStenM
1711	VDMitDis
1775	VDInsufT
1776	VDStenT
1811	VDTrPrimEt
Operative	
1975	Status
2245	OREntryDT
2250	ORExitDT
2290	AbxDisc
Coronary Bypass	
2626	IMAUsed
2629	NoIMARsn



Audit Policy – Overall Variables

Valve Surgery Explant	
3395	VSAVpr
3403	VSAVSurgType
3500	VSMVPr
3502	VSMVRepAppSurg
3620	MitralImplantTy
Mechanical Cardiac Assist Devices	
3730	IABPWhen
3780	ECMOWhen
3789	CathBasAssistWhen
Other Cardiac Procedures (M.1. Atrial Fibrillation Procedures)	
4191	OCarAFibLesLoc
Post-Operative	
6591	PostopIntub
6595	VentHrsA
6615	ICUReadm

Postoperative Events	
6690	SurSInf
6700	DeepSternInf
6755	COpReBld
6765	COpReVlv
6771	CReintMI
6774	CAortReint
6778	COpReOth
6780	COpReNon
6810	CNStrokP
6835	CPVntLng
6840	CPPneum
6870	CRenFail
6945	COtAFib



Audit Policy – Overall Variables

Discharge/Mortality	
7001	Mt30Stat
7006	DischDt
7007	DischMortStat
7060	DCASA
7070	DCADP
7075	DCOthAntiplat
7105	DCBeta
7115	DCLipLowStat
7121	MtDate
7124	MtOpD
Readmission	
7140	Readmit
7145	ReadmitDt
7160	ReadmRsn

STS National Database Audit Policy

- For the **Complications (Appendix B) and Mortality (Appendix C) sections:**
- 98.0% or greater is defined as a site that meets expectations
- 90% to 97.9% is defined as a site that does not meet expectations and requires further education
- A site achieving 89.9% or less on the Complications or Mortality section will require a re-audit within two years



Audit Policy - Complications Section Variables

DCF Section	Variable	Short Name	Sequence Number
Postoperative Events	Surgical Site Complications during postoperative period up to 30 days or during initial hospitalization	SurSInf	6690
Postoperative Events	Deep Sternal	DeepSternInf	6700
Postoperative Events	ReOp for Bleeding/Tamponade	COpReBld	6755
Postoperative Events	ReOp for Valvular Dysfunction	COpReVlv	6765
Postoperative Events	Unplanned Coronary Artery Intervention	CRintMI	6771
Postoperative Events	Aortic Reintervention	CAortReint	6774
Postoperative Events	ReOp for Other Cardiac Reasons	COpReOth	6778
Postoperative Events	Returned to the OR for Other Non-Cardiac Reasons	COpReNon	6780
Postoperative Events	Postoperative Stroke	CNStrokP	6810
Postoperative Events	Prolonged Ventilation	CPVntLng	6835
Postoperative Events	Renal Failure	CRenFail	6870
Postoperative Events	Atrial Fibrillation	COtAFib	6945
Discharge/Mortality	Operative Mortality	MtOpD	7124
Readmission	Readmit	Readmit	7140



Audit Policy – Mortality Section Variables

DCF Section	Variable	Short Name	Sequence Number
Discharge/Mortality	Status at 30 days After Surgery	Mt30Stat	7001
Discharge/Mortality	Hospital Discharge Date	DischDt	7006
Discharge/Mortality	Status at Hospital Discharge	DischMortStat	7007
Discharge/Mortality	Aspirin	DCASA	7060
Discharge/Mortality	ADP Inhibitor	DCADP	7070
Discharge/Mortality	Beta Blocker	DCBeta	7105
Discharge/Mortality	Lipid Lowering - Statin	DCLipLowStat	7115
Discharge/Mortality	Mortality - Date	MtDate	7121
Discharge/Mortality	Operative Mortality	MtOpD	7124



STS National Database Audit Policy

- **Verification of post-procedure status** for 30-day mortality is required to be submitted to the audit company. This includes any tracking logs, electronic health records, follow-up records (example office visit), or other documentation to support coding of those variables listed in Appendix D.
- 100.0% accuracy is defined as meeting expectations
- 99.9% or less for accuracy is defined as not meeting expectations and will require re-audit within two years



Audit Policy – Verification of Post-Procedure Status

DCF Section	Variable	Short Name	Sequence Number
Discharge/Mortality	Status at 30 days After Surgery	Mt30Stat	7001



STS National Database Audit Policy

- If your site meets expectations for the complications section, mortality section, post-procedure verification and overall data variables then your site will receive an audit completion certificate and the site will be removed from the audit pool for the next 3 years
- If your site does not meet expectations and requires re-audit within 2 years, your site will be selected for audit in 2 years and STS will provide further information at that time
- Contact: Emily Conrad, STS National Database Education Manager, at econrad@sts.org



Aorta Audit

- The Aorta Variables will be reported out in a separate table and will not be a part of the STS National Database Audit Policy

Sequence Number	Short Name
4500	FamHistAorta
4505	PatGenHist
4710	Presentation
4712	PrimIndic
4720	AnEtiology
4745	DisTiming
4881	ArchAnom
4889	ArchPatIMA
4952	VSAVPRAo
4963	VSAVRoot
4965	VSAVRootOReimpType
4975	ArchProc
4976	ArchProxLoc



First Steps

- A link to the [STS ACSD Data Collection Questionnaire](#) is in the audit notification letter that was sent to the Primary Data and File Contact and Surgeon Representative for your site.
- Fill out this questionnaire and provide the lead contact for the audit
- HMS staff will take over from there...



Audit Process and Timeline

1. **Audit Request Email**- within 10 days of STS ACSD Data Questionnaire Response
2. **Documentation Due Date**- 30 business days from Audit Request Email
**Due to the response period expansion from 30 calendar days extensions will be limited to extreme circumstances
3. **Review Period**- 2-3 months from documentation submission
4. **Interim Mismatch Report Issued**- upon review period completion
5. **Interim Mismatch Report Response**- response due 5 days after site receives Interim Mismatch Report
6. **Adjudication**- upon receipt of Interim Mismatch Report response
7. **Final Reporting**- sent by STS to Site Administrator and Physician Representative



Audit Request Email

- Within 10 business days of your submission of the STS ACSD Data Collection Questionnaire, the contact(s) provided will receive an encrypted email from the STS Mailbox (STS@hcmsllc.com).
- This Audit Request Email will contain information about the audit and any deadlines.
 - The email will include a link to download:
 - The case sample for your site
 - The list of variables to be audited
 - Document Submission Process Instructions



Documentation Collection

- Documentation must be submitted in PDF format.
- One PDF file for each case.
- Bookmarks or other electronic flags must be used to identify each section of the record.
- Use the naming conventions provided in the instructions for each PDF file.
- Cases can be zipped into one zip file for submission. (ACSD and Aorta separate)
- Additional information will be provided in your Document Submission Process instructions.



Documents Requested

- Two lists of audited variables will be provided – ACSD and Aorta.
- Submitted documentation should correspond with the sources you used when entering data into the STS ACSD.
- Example source documentation is included with the audited variables lists.
- Verification of 30-day status must be submitted for ACSD.
- Aorta cases will be audited separately.



30 Day Follow-up Log

	A	B	C	D	E	F	G	H	I	J
	ParticID	RecordId	PatID	MRN	Procedure date	DC Date	30 Day Mortality	30 Day DSWI	Re-Admit 30 days from DC	Follow Up Date
1							Alive- Office			
2	12345	VXXXXX	XXXXX	111111	1/1/2023	1/10/2023	visit 2/3/2023	No	No	2/3/2023
3										
4										
5										
6										
7										
8										
9										
10										



OR Log Template

- A template will be provided to submit a listing of all STS-reportable adult cardiac surgery procedures performed at your site between July 1, 2024, and September 30, 2024.

[illegible]

Document Collection: Bookmarking

The screenshot displays a medical document viewer interface. On the left, a 'Bookmarks' sidebar lists a collection of documents, including '30 day EOL', '7001 Mt30Stat', '30 day readmit', '7140 Readmit NONE', 'CoMorbidity conditions', '375 Dialysis', 'Untitled', 'covid testing', 'Patient has NOT tested Positive to COVID 19 in last 90 days.', 'DC Instructions meds', '7060 DCASA', and '7115 DCInLowStat'. The main content area on the right shows a 'Cardiology Office/Clinic Note' titled '* Final Report *'. The report includes a table of metadata (Result type, Result Date, Result status, Result Title, Source Of Report, Verified By, Encounter info) and a section titled '* Final Report *'. Below this, the 'Problem List/Past Medical History' is listed, including 'Ongoing' conditions like 'Acute on chronic blood loss anemia', 'Acute subendocardial myocardial infarction due to rapid AFL (2/2/2021)', 'small/ peak troponin 1.1', 'Angiodysplasia of colon; with Heyde's syndrome', 'CAD (coronary artery disease); status post PCI of mid circumflex (1/2011)', 'Patent (angio 12/2020)', 'HTN (hypertension)', 'Hyperlipidemia', 'Lung disease, chronic obstructive', 'Obesity', 'Paroxysmal atrial flutter, postoperative (2 wks after AVR), treated with amiodarone (recommended for 3 mo)', 'Pulmonary hypertension', 'S/P AVR 1/26/2021, 23mm Edwards Inspiris with aortic root enlargement (by Z Brewer)', 'Smoker', and 'Stasis dermatitis of both legs'.

File Edit View Window Help

Home Tools Document

Bookmarks

- 30 day EOL
 - 7001 Mt30Stat
- 30 day readmit
 - 7140 Readmit NONE
- CoMorbidity conditions
 - 375 Dialysis
 - Untitled
- covid testing
 - Patient has NOT tested Positive to COVID 19 in last 90 days.
- DC Instructions meds
 - 7060 DCASA
 - 7115 DCInLowStat

Cardiology Office/Clinic Note
* Final Report *

Result type: Cardiology Office/Clinic Note
Result Date: April 05, 2021 14:38 PDT
Result status: Auth (Verified)
Result Title: Office Visit Note: Cardiology
Source Of Report: Kozina, Joseph A MD on April 05, 2021 14:38 PDT
Verified By: Kozina, Joseph A MD on April 05, 2021 14:38 PDT
Encounter info: 38281168, CL GrVal Card, Ambulatory PCA, 04/05/2021 - 04/05/2021

* Final Report *

Problem List/Past Medical History
Ongoing

- Acute on chronic blood loss anemia
- Acute subendocardial myocardial infarction due to rapid AFL (2/2/2021), small/ peak troponin 1.1
- Angiodysplasia of colon; with Heyde's syndrome
- CAD (coronary artery disease); status post PCI of mid circumflex (1/2011).
- Patent (angio 12/2020).
- HTN (hypertension)
- Hyperlipidemia
- Lung disease, chronic obstructive
- Obesity
- Paroxysmal atrial flutter, postoperative (2 wks after AVR), treated with amiodarone (recommended for 3 mo).
- Pulmonary hypertension
- S/P AVR 1/26/2021, 23mm Edwards Inspiris with aortic root enlargement (by Z Brewer).
- Smoker
- Stasis dermatitis of both legs

Documentation Collection: Bookmarking Demo



Documentation Tips

- Submit only documentation relevant to the specific case — do not include the entire patient record.
- Screenshots or snips are acceptable as long as they include enough surrounding detail to identify the patient and encounter.
- All submitted documentation must include patient identifiers and encounter dates, including screenshots or snips.
- Missing or irrelevant documentation may lead to mismatches during the audit.
- Submit documentation before the due date to avoid delays from unforeseen submission issues.



Submission of Documentation

- Documents will be uploaded using a file submission link that will be provided in your Audit Request Email.
- Use the file naming format provided in the Document Submission Instructions.
- Name ACSD and Aorta cases accordingly. Incorrect file names may delay processing.
- Submission is secure and encrypted.
- Submissions will not be accepted via email.
- If you experience any issues with submission, reach out to the STS Audit Team at STS@hcmsllc.com.



Clinical Lead Tips



Submission Tips

- All submissions must be reviewed by your site's data abstractor to ensure completeness and accuracy. Please include only the documentation that was used during case abstraction for submission to the STS.
- **Do not submit the entire patient record or full encounter documentation.** Only relevant, supporting materials used in abstraction should be included.
- Knowing what data was entered into the database will guide you in what records to include in submission to HMS. For example: History of HTN documented in H&P pre-op office visit. Please include the H&P in your submitted records.



Common Documentation Issues

- The most common issue is missing documentation. Review the audited variables list and submit the records that correspond to what your site used to enter data into the STS Database.
- The second most common issue is including the entire patient record.
 - Submitting an excessive number of documents can significantly increase the likelihood of mismatched fields during the audit process. Very large records make it difficult to accurately identify and validate the correct variables.
 - The review will take much longer to complete, delaying your interim report. The interim report allows you the opportunity to respond to mismatches and submit any additional missing documents prior to the release of your final report.



Questions & Answers



Contacting HMS

If you experience any issues with submitting your documentation, please contact the HMS Audit Team at STS@hcmsllc.com.

Be sure to include your 5-digit STS Participant ID (PID) number in all communications



