Society of Thoracic Surgeons

Adult Cardiac Surgery Database: Monthly Webinar

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May 4, 2022

Agenda

STS National Database[™] Trusted. Transformed. Real-Time.

- Welcome and Introductions
- STS Important Dates
- STS Updates
- IQVIA Updates
- STS Education:
 - Aorta with Nancy Honeycutt
- Q & A

Important Dates for Adult Cardiac

4 May	18 May	27 May	1 Jun.
 ACSD Monthly Webinar @ 2pmCT 	 ACSD User Group Call @ 2pmCT 	 Harvest 2 Closes (OR Dates through March 31, 2022 	 ACSD Monthly Webinar @ 2pmCT Opt-out ends for H2

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Harvest 2022 Dates

		ACS	SD		
Harvest	Close	Opt-Out	Includes procedures performed through	Report Posting	Comments
H1 2022	February 25	March 1	December 31, 2021	Spring 2021	Star Rating
H2 2022	May 27	June 1	March 31, 2022	Summer 2022	
H3 2022	August 26	August 30	June 30, 2022	Fall 2022	Star Rating
H4 2022	November 18	November 22	September 30, 2022	Winter 2022	

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STS Updates

STS National Database[™] Trusted. Transformed. Real-Time. Harvest 1 2022 Posted (OR dates through December 31, 2021)

May Training Manual Posted

STS Password Required for Database Resource Information IQVIA Update Joe Brower



IQVIA Release April 2022

The below items were deployed to production the weekend of April 30

Risk Adjusted Report (analyzed)

Report Calculation Updates

- STS-8059 ACSD: Risk Adjusted Report NQF Outcome Measures - Mortality - Odds Ratio Values displaying as percent
- STS-8278 ACSD RADR Anesthesia Report section displays percentage results exceeding 100%
- STS-7887 ACSD: Risk Adjusted Report Multiple Arterial Grafts calculation confirmation and calculation update

IQVIA Updates

Important Notifications

REOPENED - STS-8072 - ACSD: Beta Blockers Within 24 Hours on RADR benchmark Report not calculating correctly – the AEP calculation is including cases that should be excluded

DCRI Analysis Known Issue – Composite Results -Failed to Prescribe patient exclusions still appear within drilldown.

- Please note that DCRI has confirmed that the Participant level results are correct. This issue appears for Harvest 1 2022 and earlier harvests.
- DCRI has advised this will be corrected when the Harvest 2 2022 results are deployed.

IQVIA Update

Please note:

Submitted tickets are currently under review and the IQVIA support team will follow up on resolution and/or target release confirmation. The IQVIA Team is currently reviewing items that will be released in an upcoming release. Those items will be posted to the Notifications section once released.



STS Education for May: Aorta



Coding the Aorta STS ACSD Monthly Webinar May 4, 2022 Nancy Honeycutt, BSN RN





Why the Challenge?

- Complex anatomy-normal & abnormal
- Multiple components
- Multiple pathologies
- Multiple devices/implants
- Multiple techniques to accomplish the same goal



Keep it Simple

- Keep calm
- Keep your tools handy
 - Training manual
 - Annotated data collection form
 - Past webinars, slides
 - Keep a friend on speed dial and "phone a friend"
 - Google
 - Ask a clinical question





Keep it Simple

- Bottom-line it
 - Most of the information you need to code the case can be found in the "Findings" and "Procedure" sections of the operative report.
 - Look for key words
 - Anatomy?
 - Procedure-repair, replacement or a combo of both?
 - Device type?
 - Circulatory arrest?
 - Coronary reimplantation?
 - Hemiarch anastomosis?
 - Debranching/arch branch reimplantation?





Complex Anatomy

The key to unlocking the mystery behind the coding of aorta procedures is to have a good understanding of the involved anatomy (normal and abnormal).



Aortic Valve

Tricuspid

- Right Coronary Cusp (RCC)
- Left Coronary Cusp (LCC)
- Non-coronary Cusp (NCC)

Defects are usually degenerative in nature

• Aortic stenosis



Aortic Valve

Bicuspid

Defects are usually congenital in nature

• If there is fusion of the leaflets, code etiology as degenerative



Aortic Root

•Includes everything between the aortic valve and the sinotubular junction (STJ).

•Corresponds to Zone o on the DCF.

•Includes the origins of the right and left coronary arteries and the aortic sinuses.

В

•May see aneurysm or dissection.



Ascending Aorta and Aortic Arch

R SCA

Ascending Aorta

Includes the innominate artery which is in Zone 0 and everything between the first 2cm distal to the left subclavian artery (Zones 1 through 3)

Aortic Arch

 Includes everything between the innominate artery and the first 2 cm dista to the left subclavian artery (Zones 1 through 3).

Descending Thoracic Aorta

• Extends from the distal arch (end of Zone 3) to the diaphragm/just above the celiac arteries. (Zones 4 and 5)



Multiple Devices/Implants

Aortic valve (mechanical or bioprosthetic) and a tube graft

a. Composite

b. Surgeon-fashioned

Aortic root bioprosthesis

c. Medtronic Freestyle Bioprosthesis-aortic valve combined with the root (one piece) Stentless





Multiple Techniques to Accomplish the Same Goal

Replace

- AV, root, ascending aorta (Bentall)
- AV and root only _____
- Root and ascending aorta
- AV and ascending aorta

Repair

 Resuspend the AV and primary repair of the root and/or ascending aorta (dissection-suturing of the tear/intimal layers)

Repair and Replace

- Resuspend/repair the AV, repair/replace the root and repair/replace ascending aorta
- David (reimplant), Yacoub (remodel) and Florida Sleeve (reconstruct)



When capturing an aortic valve procedure along with a root and an ascending aorta/aortic arch procedure, you must code the aortic valve portion in the aorta section (M2)

M.2. Aorta And Aortic Root Procedures					
$(If AortProc = Yes \downarrow)$					
Family history of disease of aorta: FamHistAorta (4500)	□ Aneurysm □ Dissection □ Both Aneurysm and Dissection □ Sudden Death □ Unknown □ None				
Patient's genetic history: PatGenHist (4505)	□ Marfan □ Ehlers-Danlos □ Loeys-Dietz □ Non-Specific familial thoracic aortic syndrome □ Aortic Valve Morphology □ Turner syndrome □ Other □ Unknown □ None				



I. Operative		
Surgeon:		Surgeon NPI:
Surgeon (1955)		SurgNPI (1960)
Taxpayer Identification Number:		
Aorta Procedure Performed:	\square Ves upplanned due to su	urgical complication
AortaProc (2123)	\square Yes unplanned due to st	ingreat complication
	\square No	isuspected disease of anatomy
	(If Yes complete Section M 2)	
	(If Aorta Procedure performed	\rightarrow) Did the surgeon provide input for a surgery data abstraction? \Box Yes \Box No
Valve Procedure Performed:	Yes 🗆 No	
OpValve (2129)		Was a valve explanted: Yes No
		(If Yes complete Section K)
		Aortic Valve Yes, planned
	$(If Yes \rightarrow)$	Procedure performed:
		\square Yes, unplanned due to unsuspected disease or anatomy
		$(If V_{OS}) W_{OS} = measurement on the Acris V_{OS} \square N_{OS}$
		$(11 1 cs \rightarrow)$ was a procedure performed on the Aorta? \downarrow Yes \Box No
		(If 'Yes' complete M2; If 'No' complete K1)

	(If 'Yes' complete M2; If 'No' complete K1)
	$(If Yes \rightarrow)$ Was a procedure performed on the Aorta? \Box Yes \Box No

Three components

- Replacement of the aortic valve
- Replacement of the aortic root and reimplantation of the coronary arteries
- Replacement of the ascending aorta





You may see this in the procedure section of the operative report

Procedure(s):

MEDIANSTERNOTOMY/ASCENDING AORTA REPLACEMENT / AORTIC ROOT REPLACMENT WITH 29MM KONECT RESILIA VALVED CONDUIT

OR

MEDIANSTERNOTOMY/AVR/ASCENDING AORTA REPLACEMENT / AORTIC ROOT REPLACMENT

OR

MEDIANSTERNOTOMY/AVR/ AORTIC ROOT REPLACMENT/HEMIARCH



You will code this case beginning with

4951-AV or Root Procedure Performed

4963-Root Procedure

4975-Surgical Ascending/Arch Procedure

5440-Devices

Intervention	
(If Aorta Procedure Performed = Yes \downarrow)	
Aortic Valve or Root Procedure Performed: VSAVAo (4951)	Yes, planned ☐ Yes, unplanned due to surgical complication ☐ Yes, unplanned due to unsuspected disease or anatomy ☐ No (If Yes ↓)
Procedure Performed:	

Procedure Performed: VSAVPrAo (4952)
Replacement (If Replacement↓)
Transcatheter Valve Replacement: Yes No VSTCVA0 (4953)
(If Yes \rightarrow) Approach: VSTCVRA0 (4954)
🗆 Transapical 🗆 Transaxillary 🗆 Transfemoral 🗆 Transaortic 🗆 Subclavian
🗆 Other 🗆 Transiliac 🛛 Transeptal 🖓 Transcarotid. 🖓 Transcaval
Surgical valve Replacement Yes 🗆 No
VSAVSurgRepAo (4955)
(If Yes →) Device type: □ Mechanical □ Bioprosthetic □ Surgeon fashioned pericardium (Ozaki) □ Other VSAVSurgTypeAo (4956)
(If Bioprosthetic→) Valve type: □ Stented □ Stentless sub coronary valve only □ Sutureless/rapid deployment VSAVSurgBioTAo (4957)
□ Repair/Reconstruction (If Repair/Reconstruction ↓)

Root Procedure (Yes □ No (If Yes↓) VSAVRoot (4963)
Surgical Ascending/Arch Procedur, Yes □ No (If Yes ↓) ArchProc (4975)



If the surgeon uses a composite valve conduit or a biologic full root

Code 4956-Device type-"Other"

Intervention		
(If A orta Procedure Derformed - Ves 1)		
Aortic Valve or Root Procedure Performed: Yes, planned Ves, unplanned due to surgical complication I disease or anatomy INO (If Yes \downarrow)	Yes, unplanned due to unsuspected	
Procedure Performed:		
Replacement (If Replacement)		
Transcatheter Valve Replacement: Yes No		
(If Yes →) Approach: ☐ Transapical ☐ Transaxillary ☐ Transfemoral ☐ Transaortic ☐ ☐ Other ☐ Transiliac ☐ Transeptal ☐ Transcarotid. ☐ Transcaval	Subclavian	
Surgical valve Replacemen Ves 🗆 No		
(If Yes -> Device type:	ardium (Ozaki)	
(If Bioprosthetic→) Valve type: □ Stented □ Stentless sub coronary valve	only Sutureless/rapid deployment	

	(If Bioprosthetic→)	Valve type: Stented Stentless sub coronary valve only Sutureless/rapid deployment	
	Device type: 🗆 N	Mechanical 🗆 Bioprosthetic 🗆 Surgeon fashioned pericardium (Ozaki) 🗖 Other	



Further describe the implant/device beginning with

4965 Composite Valve Conduit vs.Valve-Sparing Root4966 (AVRootReImpTy)4967 (AVRepBioTy)





What if.....?

If the surgeon replaces the root and the aorta and no procedure is performed on the aortic valve, code "yes" to 4951, leave 4952 *blank*, and code "yes" to 4963 and 4975.

Intervention			
(If Aorta Proced	lure Performed =	Yes ↓)	
Aortic Valve o VSAVAo (4951)	or Root Procedu	re Performed: Yes, planned □ Yes, unplanned due to surgical complication □ Yes, unplanned due to unsuspected disease or anatomy □ No (If Yes ↓)	
Procedur	re Performed:		
Procedu VSAVPrA	re Performed: (4952)		
🗆 Repla	acement (If Repl	acement↓)	
	Transcatheter V VSTCVAo (4953)	^{<i>T</i>} alve Replacement: □ Yes □ No	
	$(If Yes \rightarrow)$	Approach: VSTCVRAo (4954)	
		□ Transapical □ Transaxillary □ Transfemoral □ Transaortic □ Subclavian	
	🗆 Other 🗆 Transiliac 🗆 Transeptal 🔅 Transcarotid. 🗖 Transcaval		
	Surgical valve Replacement: Yes No VSAVSurgRepAo (4955)		
	$(If Yes \rightarrow)$	Device type:	
		(If Bioprosthetic→) Valve type: □ Stented □ Stentless sub coronary valve only □ Sutureless/rapid deployment VSAVSurgBioTAo (4957)	
	Renair/Reconstr	uction (If Panair/Paconstruction 1)	



		Root Procedure – Yes □ No (If Yes↓) VSAVRoot (4963)	
4	Sui Arc	rgical Ascending/Arch Procedury (Yes □ No (If Yes ↓) hProc (4975)	



Valve Sparing Root Procedures

Valve sparing root

- a. Reimplantation (David)
- b. Remodeling (Yacoub)
- c. Reconstruction (Florida Sleeve)
 - (no re-implantation of the coronary arteries)





Valve-Sparing Root When you see this, code this...

Valve-sparing root procedures oftentimes involve resuspension of the aortic valve by using a commissural resuspension suture. Code this in 4951 and 4958.

Context clue "...the aortic valve was resuspended at the tops of each commissure with pledgeted mattress sutures."

Intervention	
(If Aorta Procedure Performed = Yes \downarrow)	
Aortic Valve or Root Procedure Performed: VSAVAo (4951)	Yes, planned \Box Yes, unplanned due to surgical complication \Box Yes, unplanned due to unsuspected disease or anatomy \Box No (If Yes \downarrow)
Procedure Performed:	

□ Repair/Reconstruction (If Repair/Reconstruction ↓)						
Repair Type (Select all that apply) AVProcRepTypeAd	Repair Type (Select all that apply) AVProcRepTypeAo (4958)					
Commissural suture annuloplasty	□Nodular Release	□Leaflet resection suture				
□Leaflet plication	□Leaflet Shaving	□Leaflet pericardial patch				
Leaflet commissural resuspension suture	□Leaflet debridement	Division of fused leaflet raphe				
□Leaflet free edge reinforcement (PTFE)	□Ring annuloplasty external ring	□Ring annuloplasty internal ring				
□External Suture Annuloplasty	□Pannus/Thrombus removal (native valve)					

□External Suture Annuloplasty	□Pannus/Thrombus removal (native valve)	



Valve-Sparing Root *When You See, This Code This...*



Note: When coding the Florida Sleeve (4968), you must say "yes" to "Root Replacement with Coronary Ostial Reimplantation" (4964) in order to capture "Valve Sparing Root" (4965), even though the coronary arteries are not reimplanted. Code

🏹 👘 📶 to Coronary Reimplantation (4969).

Coronary Reimplantation

Types

- Button technique-(pictured) most common
- Vein graft extension-SVG Cabrol
- Dacron graft extension-Classic Cabrol



You can only code one choice

- Button combined with Cabrol in the same case, code Cabrol.
- SVG Cabrol combined with Classic Cabrol, code SVG Cabrol.

Coronary Reimplantation: VSAVCorReimp (4969)	□No □Direct to Root Prosthesis (Button) □With Vein Graft Extension (SVG Cabrol) □With Dacron Graft Extension (Classic Cabrol)



Coronary Reimplantation *When you see this, code this...*

"An aortotomy was performed and the aortic valve was not competent. The leaflets were excised. The sinuses were resected and the **coronary buttons developed**. The annulus was sized to a 29 mm Konect Edwards bioprosthetic valved conduit."

"...pledgeted sub-annular 2-0 Ethibond sutures were taken through the annulus and then through the sewing ring of the 29 mm bioprosthetic root/conduit (Konect) . The conduit was seated. The **coronary buttons were oriented and then anastomosed to the neo-root**."





Distal Technique (4980)

Was the distal anastomosis performed with or without a clamp?

Open/Unclamped

- Arch procedures are usually performed with the aortic clamp removed.
- Requires circulatory arrest.
- Context clue-if the surgeon states that the arch vessels are visualized, the aorta is *open* and distal technique is "open/unclamped".

Clamped

• The aortic clamp remains in place and the anastomosis is completed proximal to the clamp.

Circulatory Arrest

- Complete cessation of blood flow to the patient.
- Used during arch procedures.
- Circulatory arrest is a surgical technique that involves cooling the body of the patient and stopping blood circulation.
- Serves to keep the surgical field free of blood flow to aid visualization.

Cerebral perfusion

- Circulatory arrest technique that allows for provides involves blood flow and metabolic support to the brain while circulation to the rest of the body is stopped.
- Minimizes the risk of stroke and other serious complications.



Circulatory Arrest

Context clues

PROCEDURE:

MEDIAN STERNOTOMY/ASCENDING AORTA REPLACEMENT/AORTIC ROOT REPLACEMENT WITH 29MM KONECT RESILIA VALVED CONDUIT UNDER CIRCULATORY ARREST

"After completion of the aortic root and confirmation that we reached 18 °C, we then placed the patient in steep Trendelenburg, *turned off the pump, removed our cross clamp* and then transected the aorta at the level of the innominate".

You may also see documentation referring to cannulation of the innominate artery for cerebral perfusion. Sometimes a graft is used to assist cannulation (is not coded in the device section).



Surgica	l Ascending/Arch Proced	ure 🗆 Yes 🗆 No (If Ye	s↓)		
Proxima	roximal Location: STJ-midascending Midascending to distal ascending Zone 1 Zone 2 Zone 3				
Distal T	echnique Open/Uncla	mped 🗆 Clamped			
Distal Si	stal Site: Ascending Aorta Hemiarch Zone 1 Zone 2 Zone 3 Zone 4				
Distal E	Distal Extention: Elephant trunk Frozen Elephant trunk No				
Arch Branch Reimplantation: □ Yes □ No (If Yes ↓ - select all that apply)					
	Arch Branch Location:	□Innominate	□Right Subclavian	□Right Common Carotid	□Left Common Carotid
		□Left Subclavian	□Left Vertebral	□Other	

Aortic Arch Procedures

After surgery







Hemiarch

Partial arch

Total arch



Distal Site (4985) Hemiarch

Hemiarch is a single anastomosis somewhere in the ascending aorta or proximal arch withourt separate grafts to the head vessels.

Hemiarch anastomoses require circulatory arrest and are performed "open/unclamped".



Hemiarch

Context clues

"... the 32 mm Dacron graft portion of the Konect was trimmed/divided and the distal end was brought onto the field. The aorta trimmed with the bevel extending on the **underside of the arch** opposite the left subclavian origin, and the distal anastomosis was performed. "

Lesser curvature of the arch.

Surgical Ascending/Arch Procedure \Box Yes \Box No (If Yes \downarrow)

Proximal Location:
STJ-midascending
Midascending to distal ascending
Zone 1
Zone 2
Zone 3

Distal Technique: □ Open/Unclamped □ Clamped Distal Site: □ Ascending Aorta □ Hemiarch □ Zone 1 □ Zone 2 □ Zone 3 □ Zone 4 Distal Extention: □ Elephant trunk □ Frozen Elephant trunk □ No Arch Branch Reimplantation: □ Yes ↓ o (If Yes ↓ - select all that apply)

After surgery



Partial and Total Arch

Most times requires arch branch reimplantation.

Performed under circulatory arrest (open/unclamped).

Code the appropriate zone for the distal anastomosis (zones 1-4).

Surgical Ascending/Arch Procedure □ Yes □ No (If Yes ↓) Proximal Location:
STJ-midascending
Midascending to distal ascending
Zone 1
Zone 2
Zone 3 Distal Technique: □ Open/Unclamped □ Clamped Distal Site: 🗆 Ascending Aorta 🗆 Hemiarch 🗆 Zone 1 🗆 Zone 2 Zone 3 🗆 Zone 4 Distal Extention: □ Elephant trunk □ Frozen Elephant trunk □ No Arch Branch Reimplantation: □ Yes □ No (If Yes ↓ - select all that apply)



Partial arch

an island

Total arch



Distal Extension (4990)

Elephant trunk is a technique whereby excess tubular **graft** material is inserted during ascending aortic and arch repair to facilitate the subsequent treatment of distal aortic aneurysms (1).

Frozen elephant trunk refers to a distal extension consisting of a **stent** as opposed to a graft (2).





Arch Branch Reimplantation/Debranching

The reattachment of the arch vessels to the graft implant after they are detached from the native aorta during an arch replacement.





Arch Branch Reimplantation

Arch branch reimplantation is coded in 4995 and 4996.





Arch Branch Reimplantation

In Figure 1, no arch branches are reimplanted. Code no to 4995.

Arch Branch Reimplantation: Yes No (If Yes 1 - select all that apply) ArchBranReimp (4995)					
	Arch Branch Location: ArchBranReimpLoc (4996)	□Innominate	□Right Subclavian	□Right Common Carotid	□Left Commo n Carotid
		□Left Subclavian	□Left Vertebral	□Other	





Arch Branch Reimplantation

In Figure 2, three arch branches are reimplanted. Code yes to 4995 and code the appropriate vessels in 4996.





In this example, code innominate, left common carotid and left subclavian.



Devices/Implants

Only devices implanted within the aorta are coded in the device section.

This includes all synthetic prosthetics inserted (Dacron, PTFE, homografts, autografts, stents, stent-grafts, and patch grafts).

Felt and Bioglue are not included.

Note: Some aortic interventions may not require prosthetic materials or device implants, such as primary repair of a pseudoaneurysm. Do not code this implant (2) in the device section, as it is not located within the aorta. This is captured by coding arch branch reimplantation in 4995 and 4996.





Devices

Code aortic valve implants, composite valve conduits and biologic full roots in 5440 and 5441.

Include size and model# in 5442 and 5443.









Devices

Surgeon-fashioned Devices

Code the aortic valve implant in 5440 and 5441 (model and size in 5442 and 5443).

Code grafts, and/or stent grafts (endovascular implants) in 5450.

Note: When coding grafts and stent grafts, the device location is coded twice in order to capture the proximal and distal locations.







Devices

Example: AVR, root and partial arch with a surgeon-fashioned

device.

Do not code the debranching implant in the device section.

Note: Copy and paste UDI# if able. Do not enter manually.

Device(s) Inserted; ADevins (5440)	Yes 🗖 No (If Yes, list aorta	proximal to distal using	device key ↓)			
Aortic Valve or Aortic AVAVCompGraftImpIAo (S	Valve Composite Graft Ir 5441)	nplanted 1 Yes 🗆 N	o (lfYes↓)			
For devices other than	a aortic valves and aortic	c valve composite gra	afts:			
Implant Method:	mplant Method: 1=Open Surgical 2= Endovascular					
Outcome:	1= Unsucessfully implanted/maldeployed 2= Implanted/deployed and removed 3= Successfully implanted/deployed					
Model Number:	Enter device model number					
UDI:	Enter unique device identifier (not serial number)					
Location (Letter)	Implant Method	Outcome	Model Number	UDI		
ADevLoc01 (5450)	ADevDelMeth01 (5455)	ADevOut01 (5460)	ADevModel01 (5465)	ADevUDI01 (5470)		
ADevLoc02 (5475)	ADevDelMeth02 (5480)	ADevOut02 (5485) 3	ADevModel02 (5490)	ADevUDI02 (5495)		
С	1	3				
D	1	3		sts o	ra	



Things to think about...

- Annular enlargement is part of the aortic valve replacement. Do not code a separate root procedure if the patient has an isolated AVR with annular enlargement.
- Surgical ascending aorta/arch procedures involve an incision. The aorta is replaced with a *graft* (or repaired).
- Thoracic endovascular aorta repairs (TEVAR) are catheterbased procedures where a *stent* is deployed into the aorta.
- Hybrid aortic procedures (surgical and TEVAR) occurring during the same episode of care are captured with the index procedure on the same data collection form (use the OR times from the open procedure).









Thank you for your attention!

Nancy Honeycutt, BSN RN nnhoneycutt@novanthealth.org



Resources

- <u>STS National Database Webpage</u>
- <u>ACSDTechSupport@IQVIA.com</u> (Uploader, DQR, Missing Variable, Dashboard, Password and Login)
- Phone Support: 1-833-256-7187
- <u>STS National Database Feedback Form</u>
- Resource Documents
 - Contact Information
 - Webinar Information
 - FAQ Document
 - Go-Live Checklist
 - Tiered-level Support Document
 - Training Videos
 - Link to IQVIA
 - ckrohn@sts.org





Contact Information

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Open Discussion



Please use the Q&A Function.

We will answer as many questions as possible. We encourage your feedback and want to hear from you!

