Data Collection Form fields:
Updated: October 2020

Introduction

This manual is intended to clarify field definition and intent. This document contains the most up to date instructions for v. 4.20.2 data abstraction. Do not refer to old manuals or other data definitions. **Please review this document prior to submitting clinical questions.** FAQs will be added to the document in red to provide additional examples and clarification. Comments in green are provided for clarification within prior updates. Please do not print this document since it will change frequently. Using the web version will ensure that you have the most up to date information. Occasionally there may be changes or important information that will be highlighted here and will be also included in STS Database Newsletters. Unless otherwise indicated, Data Managers are not required to go back in past records to update them based on new updated FAQ's and Updates to the Training Manual. Data Mangers should move forward with new updated FAQ's and Updates to the Training Manual as they abstract records. In the event of an audit, records will be audited based on the Training Manual at the time of the OR date. **Use the Ctrl + F function to search for a number or term of interest**. Bookmarks have been added for October 2020 update

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General Information:

Procedure Inclusion – All procedures must include a surgeon that is listed in the participation agreement with the STS. Please refer to the Procedure Inclusion Guide on the website. This is not an all-inclusive list of procedures to be included and optional cases are to be added at the discretion of the Participating Surgeon. If you have a procedure that you are uncertain as to whether it should go into the manual, please send in a question to the FAQ Mailbox.

Data Collection Forms – There is only one DCF for each episode of care. The index procedure is the first qualifying STS procedure in the episode of care. The STS data collection forms should be held for three calendar years (For 2020, save data collection forms form 2017, 2018, 2019, and 2020). If you only collect data directly to the software, you are not required to create data collection forms to save**.**

A new DCF will need to be completed for another episode of care where a qualifying STS Procedure is performed. For example, a patient had a TEVAR on June 1st and was discharged on June 4th. The patient returned on June 15th with an endoleak and required another TEVAR to fix the endoleak. On the first DCF from the June 1st TEVAR you will enter the admission on June 15th as a readmission (readmit primary reason – Other – related readmission), and a readmit primary procedure of 'OR for Aorta Intervention.' A new DCF will need to be filled out for the procedure performed on the second admission as well since it was a separate readmission and any complications following the second procedure will be captured on the second DCF. This is true for all primary procedures that are captured in the STS ACSD. If a patient has a CABG and then comes back within 30 days for a Valve, the valve would be captured on a separate DCF. If there are additional questions about when a second DCF should be filled out for a new admission requiring an ACSD procedure within 30 days of the first procedure, then send in a FAQ.

Training Manual Updates – Training Manual updates will occur on a monthly basis and will be posted on the STS Website. When abstracting data, use the Training Manual updates at the time of the OR date. For example, if the OR date is November 15th, the abstractor should use the updates available in the November Training Manual.

Importing Data from Other Data Sources - Although the data many participants are entering into their STS certified software may be gathered from another electronic data system at their site (such as an EMR), it is strictly against STS policy for vendors to provide the users with the means to import this data automatically. It is not practical for the STS to certify the mapping of data from each site's EMR to the STS data specifications, which would be required to ensure the integrity of the overall STS database. There are only two exceptions to this policy:

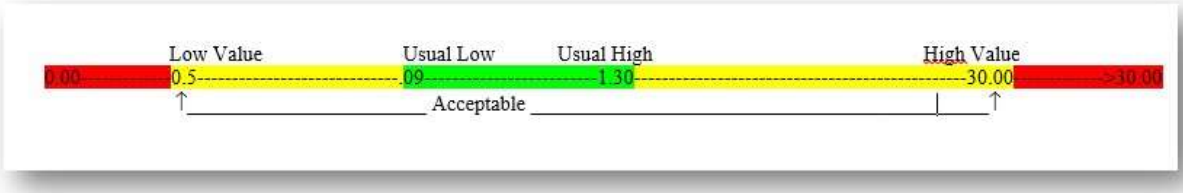
- Unique Device Identification (UDI) numbers can be imported from devices such as barcode readers. **See Software Specifications for detailed information.**
- Demographic data fields can be imported from an Admission/Discharge/Transfer (ADT) system. **See Software Specifications for detailed information**.

No and Unknown Questions - When a history and physical or a consultation exists in the medical record and the values are not specifically addressed in the documentation, code no. For example, if there is no mention of a history of cancer, then code No to history of cancer. Unknown should be coded in the circumstance where no clinical documentation exists, and the patient cannot give history and in certain situations for example when you know the patient has a history of cancer but you do not know if it is within 5 years. These certain circumstances are field specific and will be addressed in the TM. If the patient is alone, intubated and unable to give history; use the information from the patient's family if they become available.

No and Not Documented Questions - When a history and physical or a consultation exists in the medical record and the values are not specifically addressed in the documentation, code no. For example, if there is no documentation of aortic stenosis, then code No. Not Documented should be coded in the circumstance where you have clinical documentation such as an echo report, however the mitral valve regurgitation is not addressed in the report.

Text Fields – For fields where there is no option to choose yes/no/not documented/unknown, leave the field blank if you do not have an answer. For example, for preop INR, if you do not have an INR pre-op, leave the field blank.

Values Outside an Acceptable Range - When entering values into the DCF, if the values are outside of the maximum or minimum allowable range (specified as the low or high values in the Data Specifications) for the field an illegal value message will appear in the vendor tool. In this situation, enter the highest / lowest allowable value for that field. For example, patient has preop INR of 0.4. The maximum allowable value for INR is between 0.5 and 30 per the Data Specificatons Manual. In this situation code 0.5. Before using the highest or lowest allowable values, please verify the unit for the value is correct.



Long Name:	INR	*SeqNo:*	615
Short Name:	INR	*Core:*	Yes
Section Name:	Risk Factors	*Harvest:*	Yes
DBTableName	Adultdata2		
Definition:	Indicate the International Normalized Ratio (INR) closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).		
Data Source:	User	*Format:*	Real

Low Value: 0.50 High Value: 30.00 UsualRangeLow: 0.90 UsualRangeHigh: 1.30

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

30 Day Mortality / 30 Day Readmission / 30 Day DSWI Infection Log – Data Managers need to keep some type of log to include verification source, date assessed, and status of mortality, readmit, and DSWI. For example, this can be done on an excel spreadsheet or a document attached to DCF such as John Doe - Surgery 1/1/20 - Discharge 1/5/20 - checked with MD office and checked Medical Record on 2/6/20 and alive with no infection or readmit.

Administrative

SEQ. #: 5
Long Name: Software Vendor Identifier
Short Name: VendorID
Definition: Name (assigned by STS) given to identify software vendor (up to 8 characters). Vendors should use standard name identification across sites. Changes to Vendor Name Identification must be approved by the STS.

Intent/Clarification: Name must match what is listed as the Active vendor for your Participant ID in the database. Any mismatch will cause your data file submission not to process.

SEQ. #: 15
Long Name: STS Data Version
Short Name: DataVrsn
Definition: Version number of the STS Data Specifications/Dictionary, to which each record conforms. It will identify which fields should have data, and what are the valid data for each field. This must be entered into the record automatically by the software.

Intent/Clarification: Data version must be appropriate for the procedure date listed in the record. Valid date ranges can be found in the current Software Specifications.

Any mismatch will cause your data file submission not to process.

SEQ. #: 25
Long Name: Participant ID
Short Name: ParticID
Definition: Participant ID is a unique number assigned to each database participant by the STS. A database participant is defined as one entity that signs a Participation Agreement with the STS, submits one data file to the harvest, and gets back one report on their data. The participant ID must be entered into each record.
Each participant's data if submitted to harvest must be in one data file. If one participant keeps their data in more than one file (e.g. at two sites), then the participant must combine them back into one file for harvest submission.

If two or more participants share a single purchased software, and enter cases into one database, then the data must be extracted into two different files, one for each participant ID, with each record having the correct participant ID number.

Intent/Clarification:

SEQ. #: 30
Long Name: Record ID
Short Name: RecordID
Definition: An arbitrary, unique value generated by the software that permanently identifies each record in the participant's database (note that unlike the PatID value, this does not identify the individual patient). The value of the identifier is a combination of a code assigned to the software developer by the STS, and a value generated by the software to create a unique value. Once assigned to a record, this value can never be changed or reused. The data warehouse will use this value to communicate issues about individual records with the participant. It may also be used by the data warehouse to link this record to other clinical data.

Intent/Clarification:

SEQ. #: 40
Long Name: Patient ID
Short Name: PatID
Definition: An arbitrary value, (not a recognizable ID like Social Security Number or Medical Record Number) that uniquely and permanently identifies each patient. The value of the identifier is a combination of a code assigned to the software developer by the STS, and a value generated by the software to create a unique value. Once assigned to a patient, this can never be changed or reused. If a patient is admitted to the hospital more than once, each record for that patient will have the same value in this field.

Intent/Clarification:

SEQ. #: 45
Long Name: Patient Participating In STS-Related Clinical Trial
Short Name: ClinTrial
Definition: Indicate which, if any, STS-related clinical trial in which the patient is participating. The STS will assign a code to each clinical trial as they begin collecting data.

Intent/Clarification: A list of trials will be posted as they are started. There is one clinical trial underway. The Hybrid CABG trial started 10/2017. This is to be captured by checking Trial 1.

SEQ. #: 46
Long Name: Patient Participating In STS-Related Clinical Trial - Patient ID
Short Name: ClinTrialPatID
Definition: Indicate the patient identifier used to identify the patient in the clinical trial.

Intent/Clarification: Instructions will be provided for each trial.

There is one trial underway. The Hybrid CABG trial started 10/2017. Format for this field is HCR-###-####.

Demographics

SEQ. #: 50
Long Name: Patient Last Name
Short Name: PatLName
Definition: Indicate the patient's last name documented in the medical record. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 55
Long Name: Patient First Name
Short Name: PatFName
Definition: Indicate the patient's first name documented in the medical record. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 60
Long Name: Patient Middle Name
Short Name: PatMName

Definition: Indicate the patient's middle name as documented in the medical record. Leave "blank" if no middle name. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 65
Long Name: Date of Birth
Short Name: DOB
Definition: Indicate the patient's date of birth using 4-digit format for year. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: Required date format: mm/dd/yyyy

SEQ. #: 70
Long Name: Patient Age
Short Name: Age
Definition: Indicate the patient's age in years, at time of surgery. This should be calculated from the date of birth and the date of surgery, according to the convention used in the USA (the number of birthdate anniversaries reached by the date of surgery). If age is less than 18, the data record will be accepted into the database, but will not be included in the national analysis and report.

Intent/Clarification: -

SEQ. #: 75
Long Name: Sex
Short Name: Gender
Definition: Indicate the patient's sex at birth as either male or female.

Intent/Clarification: Patients who have undergone gender reassignment surgery maintain the risk associated with their chromosomal gender.

SEQ. #: 76
Long Name: National Identification (Social Security Number) Known
Short Name: SSNKnown
Definition: Indicate whether the patient’s National Identification Number is known or if the patient refused to provide this information.

Intent/Clarification: - Refused means the patient did not wish to share the information. No means the information was not available, or the participant site did not wish to provide. Do not use the Medicare number as the Social Security number. If you do not have the entire social security number, then code Seq 76 as No.

SEQ. #: 80

Long Name: National Identification
Short Name: SSN
Definition: Indicate the patient's National Identification Number. Although this is the Social Security Number in the USA, other countries may have a different National Patient Identifier Number. For example, in Canada, this would be the Social Insurance Number. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 85
Long Name: Medical Record Number
Short Name: MedRecN
Definition: Indicate the patient's medical record number at the hospital where surgery occurred. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 90
Long Name: Patient's Permanent Street Address
Short Name: PatAddr
Definition: Indicate the patient's permanent address. This should be collected in compliance with state/local privacy laws.

Intent/Clarification: If the medical record does not document if the address is permanent or not, then use the street address at which the patient resides at time of admission. If patient is homeless, enter "Homeless". A post office box may be used if no other address is available. If the patient has a northern and a southern address, choose the address where they spend most of their time. The intent is to identify patients who travel outside their local area for treatment. CMS is tracking disparities in health care delivery and looking at underserved areas. This also assists with long term follow up locally.

SEQ. #: 95
Long Name: Patient's Permanent City
Short Name: PatCity
Definition: Indicate the patient's permanent city. This should be collected in compliance with state/local privacy laws.

Intent/Clarification: - If the medical record does not document whether the city is permanent or not, then use the city in which the patient resides at time of admission.

SEQ. #: 100
Long Name: Patient's Permanent Region
Short Name: PatRegion

Definition: Indicate the patient's permanent region (i.e. state or province) in which the patient resides.

Intent/Clarification: If the medical record does not document if the region is permanent or not, then use the region of the country (i.e., state or province) in which the patient resides at time of admission.

SEQ. #: 105
Long Name: ZIP Code
Short Name: PatZIP
Definition: Indicate the ZIP Code of the patient's local residence. Outside the USA, this data may be known by other names such as Postal Code. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: Document the zip code of the patient permanent address. If the medical record does not document whether the zip code is permanent or not, then use the zip code in which the patient resides at time of admission.

SEQ. #: 115
Long Name: Country
Short Name: PatientCountry
Definition: Indicate the patient's country of residence at time of admission. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: List of country codes found in Data Specifications V 4.20.2 page 9

SEQ. #: 150
Long Name: Race Documented
Short Name: RaceDocumented
Definition: Indicate whether race is documented.

Intent/Clarification: Race should be self-reported by the patient/family. Do not assign race or make assumptions if race is not documented.

- Yes
- No
- Patient Declined to Disclose- Indicate if the patient declined to provide race or if race was not documented.

FAQ July 2020 - Our electronic medical record allows a selection of 'two or more races' to capture patients of multiple race. When this is the only documentation available within our EMR for a patient, how do we code SEQ 150?
Answer - Code SEQ 150 as NO in this scenario. It is important to work with your facility to accurately code Race since it is a component of the Risk Model.

Seq #151
Long Name: Race - Multi-Select
Short Name: RaceMulti
Definition - Indicate the patient's race(s) selecting all that apply.

Intent/Clarification: The Census Bureau collects race data in accordance with guidelines provided by the U.S. Office of Management and Budget, these data are based on self-identification. The racial categories included in the census form generally reflect a social definition of race recognized in this country and are not an attempt to define race biologically, anthropologically or genetically. In addition, it is recognized that categories of the race item include racial and national origin or socio-cultural groups. People may choose to report more than one race to indicate their racial mixture, such as American Indian and White.

People who identify their origin (ETHNICITY) as Hispanic, Latino or Spanish may be of any race. If a race is not specified for Hispanic/Latino patients, code race as 'Pt declined to disclose/NA'

General Information: Race Description

White - "White" refers to a person having origins in any of the original peoples of Europe, the Middle East, or North Africa. It includes people who indicated their race(s) as "White" or reported entries such as Irish, German, Italian, Lebanese, Arab, Moroccan, or Caucasian. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]

Black / African American - "Black or African American" refers to a person having origins in any of the Black racial groups of Africa. It includes people who indicated their race(s) as "Black, African Am., or Negro" or reported entries such as African American, Kenyan, Nigerian, or Haitian. This includes a person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American." [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]**.** Definition source: Standards for Maintaining, Collecting and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting and civil rights compliance reporting.

Asian - "Asian" refers to a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. It includes people who indicated their race(s) as "Asian" or reported entries such as "Asian Indian", "Chinese", "Filipino", "Korean", "Japanese", "Vietnamese", and "Other Asian" or provided other detailed Asian responses. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]**.** Definition source: Standards for Maintaining, Collecting and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting and civil rights compliance reporting.

American Indian / Alaskan - "American Indian or Alaska Native" refers to a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment. This category includes people who indicated their race(s) as "American Indian or Alaska Native" or reported their enrolled or principle tribe, such as Navajo, Blackfeet, Inupiat, Yup'ik, or Central American Indian groups or South American Indian groups. This includes all in North American native peoples such as American Indian/Alaskan Native, Inuit. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]

Hawaiian / Pacific Islander - "Native Hawaiian or Other Pacific Islander" refers to a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. It includes people who indicated their race(s) as "Pacific Islander" or reported entries such as "Native Hawaiian", "Guamanian or Chamorro", "Samoan", and "Other Pacific Islander" or provided other detailed Pacific Islander responses. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]**.** Definition source: Standards for Maintaining, Collecting and Presenting Federal Data on Race and Ethnicity. The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting and civil rights compliance reporting.

Other - "Some Other Race" includes all other responses not included in the White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander race categories described above. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]

SEQ. #: 185
Long Name: Hispanic or Latino or Spanish Ethnicity
Short Name: Ethnicity
Definition: Indicate if the patient is of Hispanic, Latino or Spanish ethnicity as reported by the patient / family. "Hispanic, Latino or Spanish" refers to a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. [The 2010 Census Redistricting Data (Public Law 94-171) Summary File]

Intent/Clarification: People who identify their origin as Hispanic, Latino or Spanish **may be of any race.** Do not make assumptions about ethnicity if it is not documented in the medical record.

Hospitalization

SEQ. #: 205
Long Name: Hospital Name
Short Name: HospName
Definition: Indicate the full name of the facility where the procedure was performed. Values should be full, official hospital name as it appears on the contract with the STS, with no abbreviations or variations in spelling for a single hospital. Values should also be in mixed case.

Intent/Clarification: User maintains list of valid values. New values are made available through a utility that is separate from entering a data record.

Update Hospital and Surgeon information here.

SEQ. #: 210
Long Name: Hospital ZIP Code
Short Name: HospZIP

Definition: Indicate the ZIP Code of the hospital. Outside the USA, these data may be known by other names such as Postal Code. This field should be collected in compliance with state/local privacy laws.

Intent/Clarification: -

SEQ. #: 215
Long Name: Hospital Region
Short Name: HospStat
Definition: Indicate the region of the country (i.e., state or province) in which the hospital is located.

Intent/Clarification: -

SEQ. #: 220
Long Name: Hospital National Provider Identifier
Short Name: HospNPI
Definition: Indicate the hospital's National Provider Identifier (NPI). This number, assigned by the Center for Medicare and Medicaid Services (CMS), is used to uniquely identify facilities for Medicare billing purposes.
Non-US participants will have a unique hospital ID number assigned by STS.

Intent/Clarification: STS maintains a list of Hospital NPIs associated with Participation Agreements. Data files that include other hospitals cannot be processed. **This is different from the Surgeon NPI.**
https://nppes.cms.hhs.gov/NPPES/NPIRegistryHome.do. If the field is missing or incorrect, the file will not be processed.

If the hospital NPI is changed (e.g. thru mergers/acquisitions) it is crucial that STS be notified as soon as possible. This will ensure records are handled appropriately at harvest.

Update Hospital and Surgeon information here.

SEQ. #: 221
Long Name: Hospital CMS Certification Number
Short Name: HospCMSCert
Definition: Indicate the hospital's CMS certification number

Intent/Clarification: In order to avoid confusion with the NPI, the Medicare/Medicaid Provider Number, also known as the OSCAR Provider Number, Medicare Identification Number or Provider Number) has been renamed the **CMS Certification Number (CCN).** To find the CMS certification number for your site, **c**ontact your medical records billing department for the number. You can also look for the number on the CMS website at https://www.ahd.com/search.php

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SEQ. #: 291
Long Name: Primary Payor
Short Name: PayorPrim
Definition: Indicate the primary insurance payor at time of arrival.

Intent/Clarification: When there is more than one payor, the primary payor pays first. The patient admitted after a car accident may have the primary insurance listed as the auto insurance policy with his health care policy as his secondary insurance. In this scenario, the intent is to capture the patient's normal health care policy, do not capture the auto insurance policy as primary payor.

General Information: Payor Description

None / Self – the patient has no insurance, or the patient is self pay. Code Christian Healthcare Ministries and Medi-Share Christian Health Care in this selection.

Medicare – Includes commercially managed options

- **Medicare Part A** – is hospital insurance and covers inpatient hospital stays, skilled nursing facility, hospice care and some home health care. Some patients may only have Medicare A and this is not included in Fee-for-Service.
- **Medicare Part B** – is medical insurance; payment for Pro-fee or the coverage for physician services (therefore it is coded as Fee-for-Service), outpatient care, medical supplies, and preventive services.
- **Medicare Part C / Medicare Advantage Plan** – is still a Medicare program which is managed by an insurance company, most have additional benefits – vision, and/or dental. Medicare Advantage Plan covers most Medicare benefits and usually require patients to see specific providers in their network. **All Medicare Advantage/ Managed Care plans (ie. Humana HMO Medicare) are captured in the payor category as Medicare only.** For example, if the patient has Medicare HMO, code as primary payor Medicare, there is no secondary payor in this scenario. Medicare Part D is prescription drug coverage. Medicare Part D is optional, and it's available only through private insurance companies that contract with Medicare (Medicare Advantage or Managed Care plans). Medicare Supplement plans are not part of Medicare – this is a separate private health insurance plan.

    Medicare Advantage Plan Types:

    - HMO
    - PPO
    - Private Fee-for-Service
    - Special needs plan
    - Medicare Medical Savings Account plan

Click here for more information on Medicare Plans.

Medicaid - Medicaid in the United States is a federal and state program that helps with medical costs for some people with limited income and resources. Medicaid also offers benefits not normally covered by Medicare, including nursing home care and personal care services. **All Medicaid Commercial / Managed Care plans (ie. Humana Medicare, Star Molina Medicaid) are captured in the payor category as Medicaid only.**

Commercial Health Insurance - Commercial health insurance is health insurance provided and administered by non-governmental entities. It covers medical expenses and disability income for the insured. Commercial insurance includes Medicare Supplement plans such as Medigap or AARP etc. It is a private insurance policy that can help pay for some of the health care cost Medicare doesn't cover, such as co-payments, coinsurance, and deductibles. **This is not part of Medicare** – this is a separate private health insurance plan. Point-of-service plan (POS) and Preferred Provider Organization (PPO) plans not associated with Medicare Advantage plans will be captured here.

Health Maintenance Organization (HMO) - An HMO gives you access to certain doctors and hospitals within its network. A network is made up of providers that have agreed to lower their rates for plan members and meet quality standards. But unlike PPO plans, care under an HMO plan is covered only if you see a provider within that HMO's network. There are few opportunities to see a non-network provider. There are also typically more restrictions for coverage than other plans, such as allowing only a certain number of visits, tests or treatments.

Military – US Military provides insurance. Typically reported as VA insurance or Tricare.

Non-U.S. Plan – Insurance covered by a non-U.S. source.

Other – All other insurance not listed in the above selections such as Indian Health Services, Correctional Facility, State Specific plans, other government insurance, charitable care or foundation funding.

SEQ.#: 292
Long Name: Commercially Managed Medicare Plan Primary
Short Name: ComMngMedPinPrim
Definition: Indicate whether the patient's primary payor is a commercially managed Medicare plan.

SEQ. #: 293
Long Name: HICN /MBI Known – Primary
Short Name: HICNMBIKnown
Definition: Indicate whether patient's HICN or MBI is known for primary.

Intent/Clarification: HICN numbers are made up of a nine-byte social security number plus a one to two-character Beneficiary Identification Code. A HICN number is not the same as a member number and is only associated with traditional Medicare. With the risk of identity theft becoming more and more prevalent CMS launched the Social Security Number Removal Initiative (SSNRI) years ago to remove the social security number from Medicare beneficiary identifiers. Beginning in 2018 the Medicare HICN number will be replaced with a new identifier called a Medicare Beneficiary Identifier (MBI). The MBI numbers will be eleven bytes in length, randomly generated, and will derive no components from a beneficiary's identification. Here is an example of an MBI number: 1EG4-TE5-MK73.

SEQ.#: 294
Long Name: HICN / MBI Number Known
Short Name: HICNMBI
Definition: Indicate the HICN or MBI number for primary coverage.

SEQ.#: 295
Long Name: Primary Payor Medicare Fee Part B
Short Name: PrimMCareFFS
Definition: Indicate whether the patient is covered by Part B.

Intent/Clarification: - Medicare Part B – is payment for Professional-fee or the coverage for physician services therefore it is coded as Fee-for-Service. This field is for traditional Medicare plans that pay via FFS (Fee-for-service). Medicare Replacement (Medicare Advantage) and Managed Care plans that pay via PFFS (Private-Fee-for-Service) are not captured as Medicare FFS.

SEQ. #: 298
Long Name: Secondary (Supplemental) Payor
Short Name: PayorSecond
Definition: Indicate which if any secondary insurance payor the patient had at time of arrival.

Intent/Clarification: When there is more than one payor, the secondary payor pays after the primary payor.

SEQ.#: 299
Long Name: Commercially Managed Medicare Plan Secondary
Short Name: ComMngMedPinSec
Definition: Indicate whether the patient's secondary payor is a commercially managed Medicare plan.

Intent/Clarification:

SEQ.#: 300
Long Name: HICN /MBI Known – Secondary
Short Name: HICNMBIKnownSec
Definition: Indicate whether patient's HICN or MBI is known for secondary.

Intent/Clarification: HICN numbers are made up of a nine-byte social security number plus a one to two-character Beneficiary Identification Code. A HICN number is not the same as a member number and is only associated with traditional Medicare. With the risk of identity theft becoming more and more prevalent CMS launched the Social Security Number Removal Initiative (SSNRI) years ago to remove the social security number from Medicare beneficiary identifiers. Beginning in 2018 the Medicare HICN number will be replaced with a new identifier called a Medicare Beneficiary Identifier (MBI). The MBI numbers will be eleven bytes in length, randomly generated, and

will derive no components from a beneficiary's identification. Here is an example of an MBI number: 1EG4-TE5-MK73.

SEQ.#: 301
Long Name: HICN / MBI Number - Secondary
Short Name: HICNMBINumberSec
Definition: Indicate patient's HICN or MBI number for secondary.

SEQ. #: 302
Long Name: Secondary Payor Medicare Part B
Short Name: SecondMCareFFS
Definition: Indicate whether the patient is covered by Part B.

Intent/Clarification: - Medicare Part B – is payment for Professional-fee or the coverage for physician services therefore it is coded as Fee-for-Service. This field is for traditional Medicare plans that pay via FFS (Fee-for-service). Medicare Replacement/Medicare Advantage and Managed Care plans that pay via PFFS (Private-Fee-for-Service) are not captured as Medicare FFS.

SEQ. #: 305
Long Name: Admit Date
Short Name: AdmitDt
Definition: Indicate the Date of Admission. For those patients who originally enter the hospital in an out-patient capacity (i.e., catheterization), the admit date is the date the patient's status changes to in-patient. In the event admission date comes after date of surgery, use date of surgery.

Intent/Clarification: Required date format: mm/dd/yyyy

FAQ Sept 2020 - Patient came in for explantation of RV leads x2, explantation of AICD generator, implantation of RV lead, and implantation of new AICD generator. Patient was in "extended recovery" status the entire stay. Do I code surgery date as admit date even though the patient was never technically an inpatient?
Answer - Yes code surgery date as admit date in this scenario.

SEQ. #: 310
Long Name: Date of Surgery
Short Name: SurgDt
Definition: Indicate the date of index cardiac surgical procedure. Index cardiac surgical procedure is defined as the initial major cardiac surgical procedure of the hospitalization.

Intent/Clarification: The date the patient enters the operating room for surgery.

Required date format: mm/dd/yyyy

SEQ. #: 320

Long Name: Admit Source
Short Name: AdmitSrc
Definition: Indicate the source of admission for the patient to your facility.

Intent/Clarification: Choose elective admission, through the ED, transferred in from another acute care facility or "other," which includes transfers from non-acute care facilities such as nursing homes.

- **Elective Admission** – This is a planned or scheduled admission. If a patient is admitted for an elective catheterization and is then held over for surgery (elective or urgent), this should be coded as an elective admission; however, the surgery status should be coded as urgent based on the catheterization findings. Patients on heart transplant list who are at home and receive a call that a heart has become available would be abstracted as an elective admission.

- **Emergency Department** - The patient came to the facility for this episode of care via the emergency department (excludes transfers from other facilities). If the facility has a stand-alone "feeder" ER (with the same patient ID) then the source is ED.

- **Transfer in from another hospital/ acute care** - The patient was transferred from another acute care facility (even if he/she was transferred to the emergency department) for this episode of care. Patient's transferred from one acute care hospital to another who are received in the ED while waiting bed placement are coded as transfer from another acute care facility.

- **Other** - The patient came to the facility for this episode of care by any other means. This includes transfers from non-acute care facilities. The option "Other" includes **direct admits** from MD offices, providers, non-acute clinics, Rehab units. However, if patients are sent to the ED then ED should be selected as admit source.

SEQ. #: 325
Long Name: Other Hospital Performs Cardiac Surgery
Short Name: OthHosCS
Definition: The transferring hospital has the necessary personnel and facilities to have been able to perform cardiac surgery.

Intent/Clarification: The intent is to capture patients whose acuity requires a higher level of care or more complex procedure than can be provided at the transferring facility, such as a transplant. The goal is to identify high acuity patients and does not reflect negatively on the referring hospital. Code "yes" if the transferring hospital performs heart surgery, even if it is not the type of surgery the patient is being transferred for such as transplant or VAD.

Risk Factors

General Information:

If the patient is alone, intubated and unable to give history; use the information from the patient's family when it becomes available.

Pregnancy is not captured as a risk factor; the associated risk is captured in other factors present at the time.

Do not use Risk Calculator entries for documentation of risk factors in the ACSD.

SEQ. #: 330
Long Name: Height (cm)
Short Name: HeightCm
Definition: Indicate the height of the patient in centimeters closest to time of OR entry for index procedure.

Intent/Clarification: Used to calculate BSA (body surface area) and is a field for risk calculation. 1 inch = 2.54 cm. For patients who have had lower extremity amputations, code the patient's original height. Time frame – capture height closest to time of OR for index procedure. Use the Anesthesia Record as priority source, followed by the Perfusion record. If height is not available from the above sources, use the height recorded in other documents closest to entry to OR for index procedure.

SEQ. #: 335
Long Name: Weight (kg)
Short Name: WeightKg
Definition: Indicate the weight of the patient in kilograms closest to time of OR entry for index procedure

Intent/Clarification: Used to calculate BSA (body surface area) and is a field for risk calculation. Record in kilograms. 1 Kg = 2.2 pounds. Time frame – capture weight closest to time of OR for index procedure. Use the Anesthesia Record as priority source, followed by the Perfusion record. If weight is not available from the above sources, use the weight recorded in other documents closest to entry to OR for index procedure

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Seq #: 336
Long Name: Calculated BMI
Short Name: CalculatedBMI
Definition: System calculated BMI

SEQ. #: 355
Long Name: RF-Family History of Premature CAD
Short Name: FHCAD
Definition: Indicate if the patient has any direct blood relatives (parents, siblings, children) who have had any of the following at age
<55 y for male relatives or <65 y for female relatives:
● Angina
● Acute MI
● Sudden cardiac death without obvious cause

● CABG surgery
● PCI

Intent/Clarification: The disease, treatment (surgical, non-surgical or medical) and/or symptoms must have been present or reported to have occurred prior to age 55 in males and 65 in females. This is considered a strong predictor for development of CAD and may include, but is not limited to, angina, acute MI, CABG, PCI or sudden cardiac death with no known cause. Early onset of CAD in patient and or first-generation family members direct blood relatives (parents, siblings, children) predisposes patient to increased risk of mortality/morbidity.

'Yes' can be coded for Family History of Premature Coronary Artery Disease when there is documentation of "**family history of premature coronary artery disease**" or when the supporting definition above is met. If there is conflicting information (i.e. the primary says premature family history but the surgeon documents 'the patients brother had an MI at 70') then code using the objective data. In this example, use the age of 70 and code this as no to family history.

Half-siblings are considered second-degree relatives and will not be coded as family history of first degree / direct blood relatives.

Code family history as "Unknown" if the patient is adopted and family history is unknown.

Code "Unknown" when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. For patients with a strong family history of CAD documented in the medical record and no ages / no wording of premature for any family member has been documented code unknown.

SEQ. #: 360
Long Name: RF-Diabetes
Short Name: Diabetes
Definition: History of diabetes diagnosed and/or treated by a healthcare provider. Hemoglobin A1c >=6.5% is indicative of diabetes. Please refer your healthcare providers to the 2017 ADA Standards of Medical Care in Diabetes.

2017 American Diabetes Association Standards of Medicare Care in Diabetes - 2017. Diabetes Care. 40 (Suppl.1):S13. https://professional.diabetes.org/sites/professional.diabetes.org/files/media/dc_40_s1_final.pdf.

Intent/Clarification: Indicate if the patient has a history of diabetes mellitus regardless of duration of disease or need for anti-diabetic agents. Code no for patients with steroid induced hyperglycemia and gestational (transient) diabetes if there is no supportive documentation of diabetes such as a HbA1c and/or treatment. Not all patients receiving diabetic medications are considered diabetic. It is important to remember that some medications used to treat diabetes may be used to treat other conditions.

Time frame – capture any occurrence between birth and entry to OR for index procedure.

A HbA1c value **>** 6.5, collected within 3 months prior to surgery, is acceptable for documentation of diabetes = “yes”.

Patients with a history of diabetes who have had a pancreatic transplant are coded as Yes to Diabetes.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 365
Long Name: RF-Diabetes-Control
Short Name: DiabCtrl
Definition: Indicate the patient’s diabetes control method at home.
Choose the most aggressive therapy from the order below

- Insulin: insulin treatment (includes any combination with insulin)
- Other subcutaneous medications (e.g., GLP-1 agonist)
- Oral: treatment with oral agent (includes oral agent with or without diet treatment)
- Diet only: Treatment with diet only
- None: no treatment for diabetes
- Other: other adjunctive treatment, non-oral/insulin/diet
- Unknown

2017 American Diabetes Association Standards of Medicare Care in Diabetes - 2017. Diabetes Care. 40 (Suppl.1):S13.
https://professional.diabetes.org/sites/professional.diabetes.org/files/media/dc_40_s1_final.pdf

Intent/Clarification: There must be documentation in chart to code treatment type.

For patients who have had pancreatic transplant, code “other” since the insulin from the new pancreas is not exogenous insulin.

SEQ. #: 375
Long Name: RF-Renal Fail-Dialysis
Short Name: Dialysis
Definition: Indicate whether the patient is currently (prior to surgery) undergoing dialysis on a routine.

Intent/Clarification: Includes any form of peritoneal or hemodialysis the patient is currently receiving routinely prior to surgery with the intent to resume post -op. Also, may include Continuous Veno-Venous Hemofiltration (CVVH, CVVH-D), and Continuous Renal Replacement Therapy (CRRT) as dialysis.

Code ‘” No” for renal dialysis if ultrafiltration is the only documentation found in the record since this is for volume management.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 380
Long Name: RF-Hypertension
Short Name: Hypertn
Definition: Indicate if the patient has a current diagnosis of hypertension defined by any 1 of the following:
● History of hypertension diagnosed and treated with medication, diet, and/or exercise
● Currently undergoing pharmacological therapy for treatment of hypertension
2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol 2018;71:e127-e248.

Intent/Clarification: - Time frame – capture any occurrence between birth and entry to OR for index procedure. Capturing of HTN as a risk factor must be based on Provider diagnosis of HTN in the medical record.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 385
Long Name: RF- Endocarditis
Short Name: InfEndo
Definition: Indicate whether the patient has a history of endocarditis. Endocarditis must meet the current CDC definition (See Training manual).

Intent/Clarification: Indicate whether the patient has a history of endocarditis **documented and diagnosed by a Provider**. The below CDC link is provided as a resource. Time frame – capture any occurrence between birth and entry to OR for index procedure.
https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosinfdef_current.pdf

Choose "Yes" for patients with pre-operative endocarditis who begin antibiotics post-op. Code "Yes" for patients who are diagnosed intraoperatively.

Marantic Endocarditis (Nonbacterial Thrombotic Endocarditis) (Lupus) should not be coded as infectious endocarditis.

SEQ. #: 390
Long Name: RF-Infect Endocard Type
Short Name: InfEndTy
Definition: Indicate the type of endocarditis the patient has. If the patient is currently being treated for endocarditis, the disease is considered active. If no antibiotic medication (other than prophylactic medication) is being given at the time of surgery and the cultures are negative, then the infection is considered treated.

Intent/Clarification:
- **Active** - currently being treated; also include patients who were diagnosed in the OR but began treatment postop.

- **Treated** - no antibiotic medication at time of surgery (other than prophylactic medication).

SEQ. #: 395
Long Name: RF-Infect Endocard Culture
Short Name: InfEndCult
Definition: Indicate culture results (may use cultures obtained in the OR).

Intent/Clarification: The most common causal agents are listed; choose "other" if none of these apply or "unknown" if no culture result is available. Culture Negative, Streptococcus species, Methicillin sensitive staphylococcus aureus (MRSA), Coagulase negative staphylococcus, Enterococcus species, Gram negative species, Polymicrobial, Mycobacterium (chimera), Fungal, Other, or Unknown. You may use cultures obtained in the OR.

SEQ. #: 400
Long Name: RF-Tobacco Use
Short Name: TobaccoUse
Definition: Indicate current (within 30 days prior to admission) or previous use of any tobacco product, including Cigarettes, Pipe, Cigars, Smokeless Cans, Other tobacco products (orbs, strips, sticks, hookah, etc.)

Intent/Clarification: Any type of vaping should be captured here.

- Current – Everyday smoker / vape (Tobacco use within the most recent 30 days – on a daily basis).
- Current – Some Days smoker / vape (Tobacco use within the most recent 30 days – on a less than daily basis)
- Smoker, current status unknown (Tobacco/ Vape use within the most recent 30 days– frequency of use is unknown)
- Former smoker (Tobacco/ Vape use prior to the most recent 30 days, without use within the most recent 30 days.)
- Smoking Status unknown (No information is available on patient's smoking / vape status)

Example: Patient who smoked or vaped prior to admission, has been in the hospital > 2 weeks prior to surgery, and did not smoke or vape while in the hospital is captured as "Yes, Current Everyday Smoker". The patient smoked or vaped within the 30-day window.

Medical marijuana (wrapped in tobacco leaves) which is used for anxiety is considered tobacco use.

Meaningful Use Definition
Http://www.healthit.gov/providers-professionals/achieve-meaningful-use/core-measures/record-smoking-status

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SEQ. #: 405
Long Name: RF-Chronic Lung Disease
Short Name: ChrLungD

Definition: Indicate whether the patient has chronic lung disease, and the severity level according to the following classification:

- No
- Mild: FEV1 60% to 75% of predicted or on chronic inhaled or oral bronchodilator therapy.
- Moderate: FEV1 50% to 59% of predicted or on chronic oral/systemic steroid therapy aimed at lung disease.
- Severe: FEV1 < 50% or Room Air pO2 < 60 or pCO2 > 50.
- CLD present, severity not documented.
- Unknown

Time Frame: Do not use values obtained more than 12 months prior to the date of surgery.

Intent/Clarification: **Update Oct 2020** The intent of this field is to capture those diseases that have produced a chronic change in lung function, typically manifested by the symptoms of chronic cough, wheezing, sputum production and/or dyspnea. The degree of functional impairment may vary by patient, by disease and over the span of time. The degree of impairment can be judged subjectively by symptomatic status or more quantitatively by pulmonary function testing and the frequency of symptomatic exacerbations requiring escalation of treatment. The ACSD is concerned about chronic changes in lung function and so transient conditions such as atelectasis, pneumonia, mild/transient or childhood asthma and isolated prior pneumothorax will not typically qualify as a chronic condition.

Update Oct 2020 - The typical cardiac surgery patient has a history of cigarette smoking and so the most common type of chronic lung disease in the ACSD population is Chronic Obstructive Pulmonary Disease, which includes chronic bronchitis and/or emphysema A number of these patients will require inhaled or oral pharmacological therapy (e.g., beta-adrenergic agonist, anti-inflammatory agent, leukotriene receptor antagonist, or steroid) and some will require supplemental oxygen. Pulmonary function testing is used to establish a diagnosis and to help assess its severity. Chronic lung disease can include patients with chronic obstructive pulmonary disease, chronic bronchitis, or emphysema. It can also include a patient who is currently being chronically treated with inhaled or oral pharmacological therapy (e.g., beta-adrenergic agonist, anti-inflammatory agent, leukotriene receptor antagonist, or steroid).

Update Oct 2020 Patients with chronic or extensive exposure to environmental dusts/chemicals (asbestosis, black lung disease or pneumoconiosis, etc) may qualify as having chronic lung disease based on an established diagnosis resulting from formal pulmonary evaluation. Similarly, prior lung radiation therapy typically results in radiation pneumonitis (acutely) and radiation fibrosis (chronically) and also qualifies as chronic lung disease, provided pulmonary function testing is not normal. Update October 2020 ~~A history of chronic inhalation reactive disease asbestosis, mesothelioma, black lung disease or pneumoconiosis may qualify as chronic lung disease. Radiation induced pneumonitis or radiation fibrosis also qualifies as chronic lung disease. (if above criteria are met) A history of atelectasis is a transient condition and does not qualify.~~

Spirometry results that have not been interpreted by a pulmonologist may be used to quantify chronic lung disease.

Asthma can be considered a chronic lung disease if the patient meets the criteria based on pulmonary function studies, use of inhaled medications or steroids aimed at the lungs.

Sarcoidosis can be considered a chronic lung disease if the patient meets the criteria based on pulmonary function studies, use of inhaled medications or steroids aimed at the lungs. **Update October 2020** These patients will have restrictive physiology

Patients who have had previous lung transplant due to severe CLD no longer have chronic lung disease unless the patient meets the criteria based on pulmonary function studies, use of inhaled medications or steroids aimed at the lungs.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

Update Oct 2020 Grading the Severity of Chronic Lung Disease:
It is important to understand that the criteria used to grade the severity of lung disease have evolved over time, but all grading schema incorporate the results of pulmonary function testing. **The ACSD uses the FEV1 criteria noted above.** We do so because it is a reasonable framework, and it has been a stable format over the years both for the purposes of risk model development and consistency in reporting over time. However, other grading systems, such as the Global Initiative for Chronic Obstructive Lung Disease or GOLD criteria for FEV1 grading have changed over the years. GOLD uses slightly different cutoffs in FEV1 for grading the severity of disease. Additionally, GOLD currently uses a severity schema that incorporates both PFTs and clinical symptoms and response to treatment. So, when you see a difference between the surgical team and the pulmonologist, it may be the results of using different grading systems. **Please use only the ACSD criteria listed above.**

Chronic lung disease, and the severity level is determined by the highlighted above criteria per the data definition for example:

Bedside spirometry results have an FEV1 of 57% but the pulmonologist states the patient has mild chronic lung disease. Code as moderate based on the FEV1 of 57%.

Patient had PFT with FEV1 of 48%. I have not seen any documented diagnosis of chronic lung disease in the chart. Code as severe per FEV1.

Patient had PFT with FEV1 of 78% and a room air ABG with a PCO2 of 36.5 and a PO2 of 56. Code as severe per the room air ABG.

Patient had PFT with FEV1 of 79% and is on Spiriva inhaler and albuterol inhalers at home. Pulmonary physician cleared patient for surgery documenting the patient had stable COPD and normal PFTs. Code as mild per the use of chronic inhalers at home.

SEQ. #: 410
Long Name: RF-Chronic Lung Disease - Type
Short Name: ChrLungDType
Definition: Indicate the type of chronic lung disease.

Intent/Clarification:

- **Obstructive** - Obstructive chronic lung disease is characterized by chronically poor airflow. It typically worsens over time and the main symptoms include shortness of breath, cough, and sputum production (ex. COPD; Chronic Bronchitis; Emphysema). **Update Oct 2020** Obstructive chronic lung disease is caused by conditions that obstruct the flow of air through the respiratory system That obstruction can come from the narrowing of smaller or larger bronchioles from chronic inflammation, excessive contraction of smooth muscles or from the loss of elastic recoil in the lungs (such as in severe emphysema due to the destruction of alveolar units). For our patient population, COPD (Chronic Obstructive Pulmonary Disease) is by far the most common entity creating an obstructive defect. Asthma, as noted in the prior section, creates reversible obstruction. In its earlier or milder forms, it typically does not create chronic obstruction. However, long standing or poorly treated asthma may demonstrate chronic obstructive changes on PFTs. Other causes of chronic obstruction are from bronchiectasis and cystic fibrosis, but these conditions are very uncommon in the ACSD patient population.

- **Reactive** - **Update Oct 2020** - this category should rarely, if ever, be used. Reactive lung disease is an older construct, its use is somewhat controversial, it does not have a clear definition and has been used to describe different conditions. It is sometimes informally used as a placeholder for asthma before a definitive diagnosis can be made. Reactive airway disease should not be confused with Reactive Airway Dysfunction Syndrome or RADS, which is caused by excessive exposure to corrosive gases or vapors. ~~Reactive lung disease is a specific type of reactive airway disease, a term used to generally describe a condition where the individual experiences asthma-like symptoms after exposure to toxins. This can include asbestosis and mesothelioma~~.

- **Interstitial Fibrosis** - **Update Oct 2020** Interstitial Fibrosis - Interstitial fibrosis comprises a group of parenchymal lung diseases that **are more properly included in the restrictive lung disease category**, as noted above. Please disregard this category and code interstitial diseases in the restrictive category
    - ~~Interstitial lung disease (ILD), also known as diffuse parenchymal lung disease (DPLD), refers to a group of lung diseases affecting the interstitium (the tissue and space around the air sacs of the lungs). It concerns alveolar epithelium, pulmonary capillary endothelium, basement membrane, perivascular and perilymphatic tissues. The term ILD is used to distinguish these diseases from obstructive airways diseases; (ex. ILD, DPLD, Cystic Fibrosis~~)

- **Restrictive** - Restrictive lung diseases, or restrictive ventilatory defects, are a category of extrapulmonary, pleural, or parenchymal respiratory diseases that restrict lung expansion, resulting in a decreased lung volume, an increased work of breathing, and inadequate ventilation and/or oxygenation. Update Oct 2020 - Restrictive lung diseases are less common than obstructive but comprise a diverse group of underlying conditions. The hallmark of all these diseases is that they restrict the ability of the lung to expand to normal volumes. These diseases include entities that:
    - interfere with the interstitium or lung parenchyma itself. They include things like idiopathic pulmonary fibrosis, the interstitial pneumonitises, collagen vascular disease (such as lupus, rheumatois arthritis, scleroderma and the like), chronic infection (such as TB and pneumocystis), occupational related diseases (such as asbestosis, silicosis, berryliosis and hypersensitivity pneumonitis), drug toxicity (as

seen with amiodarone and chemotherapy) and radiation fibrosis.
    - affect the chest wall, pleura or diaphragm can restrict the lungs as well. Examples are kyphoscoliosis, pectus excavatum, pleural thickening or effusion (as from chronic inflammation or even mesothelioma), elevated diaphragm and extreme abdominal obesity.
    - neuromuscular diseases such as as myasthenia and Amyotrophic Lateral Sclerosis can weaken respiratory muscles and impair lung expansion.

- **Other** - chronic lung disease other than previously described (ex: Amiodarone toxicity)

- **Multiple** - Multiple types of chronic lung disease conditions are present.

- **Not documented**

SEQ. #: 415
Long Name: RF-Pulmonary Function Test
Short Name: PFT
Definition: Indicate whether pulmonary function tests were performed.

Intent/Clarification: Pulmonary function testing is a valuable tool for evaluating the respiratory system, representing an important adjunct to the patient history, various lung imaging studies, and invasive testing such as bronchoscopy and open-lung biopsy. Insight into underlying pathophysiology can often be gained by comparing the measured values for pulmonary function tests obtained on a patient at any point with normative values derived from population studies. The percentage of predicted normal is used to grade the severity of the abnormality. Pulmonary function testing is used in clinical medicine for evaluating respiratory symptoms such as dyspnea and cough, for stratifying preoperative risk, and for diagnosing common diseases such as asthma and chronic obstructive pulmonary disease.

Spirometry results that have not been interpreted by a pulmonologist may be used to quantify chronic lung disease.

Time Frame: Do not use values obtained more than 12 months prior to the date of surgery.

SEQ. #: 420
Long Name: RF-Forced Expiratory Volume Predicted
Short Name: FEV1
Definition: Indicate the FEV1 % predicted from the most recent pulmonary function test prior to procedure. Choose the highest value reported for % predicted, with or without a bronchodilator.

Intent/Clarification: FEV_1 is the maximal amount of air forcefully exhaled in one second. It is then converted to a percentage of normal. For example, the FEV_1 may be 80% of predicted based on height, weight, and race. FEV_1 is a marker for the degree of obstruction. In normal persons, the FEV_1 accounts for the greatest part of the exhaled

volume from a spirometric maneuver and reflects mechanical properties of the large and the medium-sized airways.

- FEV1 > 75% of predicted = Normal
- FEV1 60% to 75% of predicted = Mild obstruction
- FEV1 50% to 59% of predicted = Moderate obstruction
- FEV1 < 50% of predicted = Severe obstruction

FAQ October 2020 - If a FEV1 is 49.9% do I code this as 49 or 50?
Answer – Do not round up, code as 49.

SEQ. #: 425
Long Name: DLCO Test Performed
Short Name: DLCO
Definition: Indicate whether a lung diffusion test (DLCO) was performed.

Intent/Clarification: The diffusing capacity (DLCO) is a test of the integrity of the alveolar-capillary surface area for gas transfer.

SEQ. #: 430
Long Name: DLCO Predicted
Short Name: DLCOPred
Definition: Indicate the % predicted DLCO value obtained for the patient. Choose the value that represents the lowest % predicted whether or not it is the simple DLCO or the DLCO/VA.

Intent/Clarification: The lowest value for DLCO uncorrected should be captured. A PFT may report DLCO_SB, DLCOcSB, DLCO/VA. The difference in the DCLO SB (simple DCLO) and the DCLOcSB is that the DCLOcSB is corrected for the hgb value. In this scenario, capture the lowest DLCO_SB or DLCO/VA value. Do not use the DLCOcSB since it is a corrected value.

SEQ. #: 435
Long Name: RF-Arterial Blood Gas
Short Name: ABG
Definition: Indicate whether a room-air arterial blood gas was performed prior to surgery. Answer no if the only available arterial blood gasses were drawn while patient was receiving supplemental oxygen.

Intent/Clarification: Arterial blood gasses may be drawn in patients with suspected lung disease or sometimes during cardiac catheterization. Time frame **-** use the arterial blood gas value closest to surgery within 30 days of surgery.

Do not use ABGs drawn after initiation of anesthetic management. They may not accurately reflect the patient's true baseline due to preop sedation, anxiety, pain and other factors.

SEQ. #: 440
Long Name: RF-Carbon Dioxide Level
Short Name: PCO2
Definition: Indicate PCO2 on most recent room air blood gas prior to procedure.

Intent/Clarification: Higher levels (CO_2 retention) may indicate hypoventilation and low levels are consistent with hyperventilation. The normal range is 35-45 mmHg.

SEQ. #: 445
Long Name: RF-Oxygen Level
Short Name: PO2
Definition: Indicate PO2 result on most recent room air arterial blood gas prior to procedure.

Intent/Clarification: The partial pressure of oxygen that is dissolved in arterial blood in known as PO_2. In persons over 60 years of age, the normal is lower. Normal values 80-100mm Hg.

SEQ. #: 450
Long Name: RF-Home Oxygen
Short Name: HmO2
Definition: Indicate whether supplemental oxygen at home is prescribed and used.

Intent/Clarification:
Choices include the following:

- Yes, PRN
- Yes, Oxygen dependent
- No
- Unknown

Code "No" for patients who are using home O_2 on a prn basis but have not used oxygen for > 1 month.

Code "Unknown if there is no indication of when home O_2 was last used. Code "Unknown" when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history

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SEQ. #: 455
Long Name: RF-Inhaled Medication or Oral Bronchodilator Therapy
Short Name: BDTx
Definition: Indicate whether oral and/or inhaled bronchodilator or inhaled (not oral or IV) steroid medications were in use by the patient routinely prior to this procedure.

Intent/Clarification: Capture patients with prescribed home bronchodilator therapy prior to admission. Capture only routine use. Asthma patients can be included.

A bronchodilator is a substance that dilates the bronchi and bronchioles, decreasing airway resistance and thereby facilitating airflow. They are most useful in obstructive lung diseases, of which asthma and chronic obstructive pulmonary disease are the most

common conditions. Bronchodilators are either short-acting or long-acting. Short-acting medications provide quick or "rescue" relief from acute bronchoconstriction. Long-acting bronchodilators help to control and prevent symptoms.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 460
Long Name: RF-Sleep Apnea
Short Name: SlpApn
Definition: Indicate whether patient has a diagnosis of sleep apnea (may be described as obstructive sleep apnea or OSA).

Intent/Clarification: Sleep apnea is a potentially serious sleep disorder in which breathing repeatedly stops and starts during sleep. Sleep apnea occurs in two main types: Obstructive Sleep Apnea, the more common form that occurs when throat muscles relax, and Central Sleep Apnea, which occurs when the brain doesn't send proper signals to the muscles that control breathing. Additionally, some people have complex sleep apnea, which is a combination of both. Sleep apnea has been associated with sudden death.

- Capture patients with prescribed home therapy despite frequency of use.
- Sleep apnea must be diagnosed by a physician/NP/PA. Sleep Apnea cannot be diagnosed with a screening tool. It needs to be diagnosed with a formal diagnostic tool such as sleep study**.**
- **Do not capture suspected sleep apnea or that reported by family members as sleep apnea.**
- CPAP or BiPAP therapy is no longer a requirement to code "yes" for sleep apnea.
- Code "No" to sleep apnea if sleep apnea has been surgically corrected.
- Code “Yes” if sleep apnea is diagnosed using a formal diagnostic tool such as a sleep study but is not treated.
- Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 465
Long Name: RF-Pneumonia
Short Name: Pneumonia
Definition: Indicate whether patient has a recent (within 30 days) or remote (more than 30 days) history of pneumonia.

Intent/Clarification: Pneumonia is an infection of one or both lungs caused by bacteria, viruses, fungi, chemicals, or aspiration. It can be community acquired or acquired in a health care setting. Typical symptoms associated with pneumonia include cough, chest pain, fever, and difficulty in breathing. Diagnostic tools include x-rays and examination of the sputum. Treatment depends on the cause of pneumonia; bacterial pneumonia is treated with antibiotics.

Code as:

- Recent- pneumonia diagnosis within 30 days of procedure or
- Remote - pneumonia diagnosis more than 30 days prior to the procedure.

- No - meaning no history of pneumonia
- Unknown - Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

There must be documentation of pneumonia to code "Yes". "**Possible** pneumonia" with antibiotic treatment should be coded "Unknown".

Pneumonitis, inflammation of the lung tissue, without infection is not considered pneumonia and should be coded as "no".

SEQ. #: 470
Long Name: RF-Illicit Drug Use within One Year
Short Name: IVDrugAb
Definition: Indicate whether there is documented history of use of illicit drugs, such as heroin, cocaine, or methamphetamine, or abuse of a controlled substance within the last year.

Intent/Clarification: Capture patients with use of illicit (illegal) drugs. Include abuse of controlled substances (prescription medication/opioid abuse). Illicit drug use is associated with numerous health and social problems, and age-related physiological, psychological, and social changes that could impact recovery from surgery.

- **Yes –** within 1 year
- **No** – no illicit drug use
- **Unknown** - Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if drug use has not been assessed.

Marijuana should not be captured as an illicit drug. Code Illicit drug use if the drug screen is positive for drugs, such as heroin, cocaine, or methamphetamine.

SEQ.#: 471
Long Name: RF-Intravenous Drug Use Within One Year
Short Name: IVDrugUse1Yr
Definition: Intravenous Drug Use within one year of surgery.

Intent/Clarification: Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if IV drug use has not been assessed.

SEQ.#: 472
Long Name: RF- Drug Use within 30 days of procedure?
Short Name: DrugUse30D
Definition: Indicate if the patient has used Illicit drug use within 30 days of surgery.

Intent/Clarification: Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if the patient has used illicit drugs, but you do not know if it was within 30 days of surgery.

SEQ. #: 480
Long Name: RF-Alcohol Use
Short Name: Alcohol
Definition: Specify alcohol consumption history.

Intent/Clarification: Code current alcohol use (within 30 days of surgery):

- ≤ 1 drink per week (rare or occasional drink) one beer, one glass of wine or one shot
- 2-7 drinks per week (Social)
- ≥ 8 drinks per week (Heavy drinker)
- None (Non-drinker)
- Unknown- Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if alcohol use has not been assessed.

Alcohol abuse is not necessarily a quantity of alcohol but implies interference with home, work and life functioning. Documentation the patient is an alcoholic at the time of admission should be coded ≥ 8 drinks per week.

SEQ. #: 485
Long Name: RF-Liver Disease
Short Name: LiverDis
Definition: Indicate whether the patient has a history of hepatitis B, hepatitis C, drug induced hepatitis, auto-immune hepatitis, cirrhosis, portal hypertension, esophageal varices, liver transplant, or congestive hepatopathy. Exclude NASH in the absence of cirrhosis.

Intent/Clarification: LFTs or a MELD score alone **cannot** be used to code "Yes" to liver disease since other conditions impact these lab values. Liver fibrosis with recurrent ascites, supported by the MELD can be coded as liver disease. Time frame – capture any occurrence between birth and entry to OR for index procedure.

The following are not coded as liver disease:

- Hepatitis A / Hepatitis E
- Gilberts syndrome
- Fatty liver
- Liver Cancer

Hepatic Sarcoidosis should not be coded alone as liver disease. To code liver disease other qualifying disease criteria must be met (cirrhosis, hepatitis, MELD score).

Update October 2020 Hemochromoatosis can lead to liver disease but is not considered liver disease by itself.
Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

FAQ August 2020 - Would ischemic hepatitis be coded as liver disease? Patient initially presented with septic shock and endocarditis with no documented prior liver history.
Answer - No, ischemic hepatitis or shock liver is a result of the sepsis and is not liver disease as defined in SEQ 485.

SEQ.#: 486
Long Name: RF-Liver Cirrhosis
Short Name: LiverCirrhosis
Definition: Indicate if the patient has a history of liver cirrhosis.

Intent/Clarification: Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Time frame – capture any occurrence between birth and entry to OR for index procedure.

FAQ September 2020 - Patient has a history of liver disease and cirrhosis s/p liver transplant 2016. Are you still considered to have cirrhosis despite the transplant?
Answer - In this scenario, since the patient has new liver, only code cirrhosis if the new liver has cirrhosis.

SEQ. #: 488
Long Name: RF-Liver Disease - Child Pugh Class
Short Name: LiverChildPugh
Definition: Indicate the Child Pugh Class, if known.

Intent/Clarification: Documentation includes the compilation of the MELD score, the clinical diagnosis and the controllability of ascites. It is the responsibility of the surgeon/physician/ APN or PA to calculate the Child-Pugh classification and document the score in the medical record. If not documented, code unknown.

- Child-Pugh A
- Child-Pugh B
- Child-Pugh C
- Unknown

SEQ. #: 492
Long Name: Immunocompromised Present
Short Name: ImmSupp
Definition: Indicate whether immunocompromise is present due to immunosuppressive medication therapy within 30 days preceding the operative procedure or existing medical condition (see Training Manual).

Intent/Clarification: This includes, but is not limited to systemic steroid therapy, anti-rejection medications and chemotherapy. This does not include topical steroid applications, one-time systemic therapy, inhaled steroid therapy or pre-procedure protocol.

Include patients being treated with IVIG, Methotrexate, AntiTNF, Azasan, Imuran, and Hydroxurea. Patients who have had splenectomy are considered immunocompromised. Examples of conditions causing immunocompromise include Hypogammaglobulinemia, HIV infection, HGB H disease Thalassemia, and patients with systemic lupus taking Plaquenil QD.

Examples of patients who are not considered immunocompromised include:

- Splenic sequestration
- Partial Splenectomy - partial splenectomy may reduce both short and long-term mortality by preserving immune system functioning.
- Patient with IgG4 related sclerosing disease

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if the patient has used immunosuppressive medication therapy, but you do not know if it was within 30 days of surgery.

SEQ. #: 495
Long Name: Mediastinal Radiation
Short Name: MediastRad
Definition: Indicate whether patient has a history of radiation therapy to the mediastinum or chest.

Intent/Clarification: Chest wall or mediastinal radiation can cause damage to blood vessels, heart valves and lung tissue. Scar tissue caused by radiation therapy can lead to increased bleeding, may make harvesting the internal mammary artery difficult and may interfere with sternal healing**.** Time frame – capture any occurrence between birth and entry to OR for index procedure

Include radiation to the “mantel/chest” area only – this includes breast cancer with radiation.

Brachymesh radiation to the mediastinal area is not beam radiation; however, it is low-dose rate iodine-125 seeds which have limited range and limited impact to reentry into the chest and should **not be coded** as Mediastinal Radiation.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 500
Long Name: RF-Cancer Within 5 Years
Short Name: Cancer
Definition: Indicate whether the patient has a history of cancer diagnosed within 5 years of procedure. Do not capture low grade skin cancers such as basal cell or squamous cell carcinoma.

Intent/Clarification: Capture cancers that have or will require surgical intervention, chemotherapy and or radiation therapy. If the date of diagnosis is not known, then the date of the last treatment may be used to determine the 5-year interval.

- **Yes -** within 5 years
- **No -** patient has never had cancer or has had cancer but not within 5 years
- **Unknown** - Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history. Code unknown if patient has a history of cancer but you do not know if the cancer occurred within 5 years.

SEQ. #: 505
Long Name: RF-Peripheral Arterial Disease
Short Name: PVD
Definition: Indicate whether the patient has a history of peripheral arterial disease (includes upper and lower extremity, renal, mesenteric, and abdominal aortic systems). This can include:

1. Claudication, either with exertion or at rest,
2. Amputation for arterial vascular insufficiency,
3. Vascular reconstruction, vascular bypass surgery, or percutaneous intervention to the extremities (excluding dialysis fistulas and vein stripping).
4. Documented abdominal aortic aneurysm with or without repair.
5. Documented subclavian artery stenosis.

Peripheral arterial disease excludes disease in the carotid, cerebrovascular arteries or thoracic aorta. PVD does not include DVT, pulmonary artery aneurysm, Raynaud’s Disease or AVM.

Intent/Clarification: PAD (Peripheral Arterial Disease) is sometimes called PVD (Peripheral Vascular Disease), which can include disease of either peripheral vein or peripheral artery. Code only arterial disease, not venous disease.

Time frame – capture any occurrence between birth and entry to OR for index procedure.

Documentation from a healthcare provider is required to code this field. If documentation is vague or further clarification is needed to abstract correctly then a data manager may use diagnostic results to confirm abstraction. Positive testing, invasive or non-invasive, showing a >50% diameter stenosis in any peripheral artery is a possible indicator of PVD. You must have supporting documentation from the healthcare provider.

If there is conflicting information, then please clarify with patients HCP. For example, a CT Angiogram shows 80% stenosis in the iliac artery but there is no documentation from the patient’s healthcare provider to clarify that this is PAD. Clarification and documentation from the Provider is needed to abstract PAD.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history

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SEQ. #: 512
Long Name: Unresponsive State
Short Name: UnrespStat
Definition: Indicate whether the patient has a history of non-medically induced, unresponsive state within 24 hours of the time of surgery. Patient experienced complete

mental unresponsiveness and no evidence of psychological or physiologically appropriate responses to stimulation, includes patients who experience sudden cardiac death.

Intent/Clarification: The intent is to identify those patients whose postoperative neurologic state may not be a result of the surgery but rather patient's unknown preoperative neurologic status.

Code "Yes" if the patient never regained consciousness prior to surgery.

Temporary loss of consciousness that resolved after cardiac arrest should not be coded as yes.

SEQ. #: 515
Long Name: Syncope
Short Name: Syncope
Definition: Indicate whether the patient had a sudden loss of consciousness with loss of postural tone, not related to anesthesia, with spontaneous recovery and believed to be related to cardiac condition. Capture events occurring within the past one year as reported by patient or observer. Patient may experience syncope when supine.

Intent/Clarification: Cardiac conditions including dysrhythmias, such as ventricular tachycardia or ventricular fibrillation, and aortic stenosis can cause syncope.

Near syncope should be coded as "no". Cardiac arrest with resuscitation is **not** syncope.

Code "Unknown" when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history

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SEQ. #: 525
Long Name: Cerebrovascular Dis
Short Name: CVD
Definition: Indicate whether the patient has a current or previous history of any of the following:
Indicate whether the patient has a current or previous history of any of the following:

A. Stroke: Stroke is an acute episode of focal or global neurological dysfunction caused by brain, spinal cord, or retinal vascular injury as a result of hemorrhage or infarction, where the neurological dysfunction lasts for greater than 24 hours.
B. TIA: is defined as a transient episode of focal neurological dysfunction caused by brain, spinal cord, or retinal ischemia, without acute infarction, where the neurological dysfunction resolves within 24 hours.
C. Noninvasive or invasive arterial imaging test demonstrating >=50% stenosis of any of the major extracranial or intracranial vessels to the brain.
D. Vertebral artery and internal carotid and intracranial consistent with atherosclerotic disease with document presence as CVD. External carotid disease is excluded.
E. Previous cervical or cerebral artery revascularization surgery or percutaneous intervention
F. Brain/cerebral aneurysm.

G. Occlusion of vertebral artery, internal carotid artery, and intracranial due to dissection.

This does not include chronic (nonvascular) neurological diseases or other acute neurological insults such as metabolic and anoxic ischemic encephalopathy. Subdural hematoma or AVM is not cerebral vascular disease.

Intent/Clarification: Internal carotid and common carotid disease are captured. External carotid disease is not captured. A positive CT scan, even in the patient with no symptoms, should be coded as cerebral vascular disease. A CT scan following surgery with evidence of old infarct or chronic should be coded yes.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 530
Long Name: Prior CVA
Short Name: CVA
Definition: Indicate whether the patient has a history of stroke. Stroke is an acute episode of focal or global neurological dysfunction caused by brain, spinal cord, or retinal vascular injury as a result of hemorrhage or infarction, where the neurological dysfunction lasts for greater than 24 hours.

Intent/Clarification: Include any confirmed neurological deficit of abrupt onset caused by a disturbance in cerebral blood supply that did not resolve within 24 hours of the event. The physical deficit can be in the form of extremity weakness, facial asymmetry, language (speech and/or cognitive thinking) impairment. The intent is to differentiate between neurological events that resolve within 24 hours and those that don’t. Time frame – capture any occurrence between birth and entry to OR for index procedure

Code “yes” to prior CVA if the patient has no history of stroke and no symptoms but imaging study results show an infarct (old/chronic or new) or cerebral septic emboli.

Not all subarachnoid hemorrhages will create a stroke. There must be some form of deficit (symptoms lasting > 24 hr) documented in the chart to code SAH as a CVA.

Unknown should be selected if any neurologic dysfunction occurred or was suspected, did not resolve in 24 hours, and could not be confirmed or when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 535
Long Name: RF-Prior CVA-When
Short Name: CVAWhen
Definition: Indicate when the CVA events occurred. Those events occurring within 30 days prior to the surgical procedure are considered recent, while all others are considered remote.

Intent/Clarification:
≤ 30 days is recent
> 30 days is remote

SEQ. #: 540
Long Name: CVD TIA
Short Name: CVDTIA
Definition: Indicate whether the patient has a history of a Transient Ischemic Attack (TIA). Transient ischemic attack (TIA) is defined as a transient episode of focal neurological dysfunction caused by brain, spinal cord, or retinal ischemia, without acute infarction, where the neurological dysfunction resolves within 24 hours.

Intent/Clarification: Time frame – capture any occurrence between birth and entry to OR for index procedure.

Choices are:

- Yes
- No
- Unknown - Unknown should be selected if any neurologic dysfunction occurred or was suspected, was resolved in 24 hours, and could not be confirmed or when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 545
Long Name: CVD Carotid Stenosis
Short Name: CVDCarSten
Definition: Indicate which carotid artery was determined from any diagnostic test to be >= 50% stenotic.

Intent/Clarification: Code what is found on the study closest to entry into OR for index procedure even if a prior stent / CEA is in place. **Update August 2020 – Timeframe code the study closest and prior to OR Entry, done within 1 year of OR date**. Internal carotid and common carotid disease are captured. External carotid disease is not captured.

Choices are:

- None
- Right
- Left
- Both

If the results are reported in a range, such as “40-50%”, choose the highest level in the range.

If dissection occluded the artery, then code as 100%. A dissection because the blood flow is null acts like an occlusion.

When a carotid duplex reports stenosis as 0-59% but states "no evidence of hemodynamic significance," code No for CVD given the range of 0-59% and documentation of no hemodynamic significance.

SEQ. #: 550

Long Name: CVD Carotid Stenosis - Right
Short Name: CVDStenRt
Definition: Indicate the severity of stenosis reported on the right carotid artery.

Intent/Clarification: Indicate % stenosis:
50 - 79% or “moderate”
80 - 99% or “critical”, “severe”, or “subtotal”.
100% or “total” or “occluded”
Not documented

If the results are reported in a range, such as “40-50%”, choose the highest level in the range.

SEQ. #: 555
Long Name: CVD Carotid Stenosis - Left
Short Name: CVDStenLft
Definition: Indicate the severity of stenosis reported on the left carotid artery.

Intent/Clarification: Indicate % stenosis:
50 - 79% = “moderate”
80 - 99% = “critical”, “severe”, or “subtotal”.
100% = “total” or “occluded”
Not documented

If the results are reported in a range, such as “40-50%”, choose the highest level in the range.

SEQ. #: 560
Long Name: CVD Prior Carotid Surgery
Short Name: CVDPCarSurg
Definition: Indicate whether the patient has a history of previous carotid artery surgery and/or stenting.

Intent/Clarification: Time frame – capture any occurrence between birth and entry to OR for index procedure. Carotid endarterectomy is a surgical procedure during which a surgeon removes atherosclerotic plaque or other material obstructing the flow of blood from the artery. This procedure eliminates a substance called plaque from the artery and can restore blood flow. Carotid artery stenting is a procedure in which a slender, metal-mesh tube, called a stent, is inserted and expands inside the carotid artery to increase blood flow in areas blocked by plaque.

Also includes internal carotid artery aneurysm coils and a history of carotid angioplasty.

General Information for Labs:

Use results closest to surgery, prior to anesthesia provider initiating care. Lab values should be collected within 30 days. Do not use labs collected > 30 days prior to surgery, unless otherwise stated below.

Capture lab values if available. Not all patients will have, or need to have, all the following labs drawn.

Do not use labs drawn after IV fluids are hung in holding area or OR.

Include POC (point of care) results.

Do not round lab values up.

Update July 2020 – For lab values that are documented as more or less than a value (< or >), code as the next decimal point below or above the value. For example, if the total bilirubin closest to entry into the OR is documented as "<0.2". Code as 0.19.

SEQ. #: 565
Long Name: Last WBC Count
Short Name: WBC
Definition: Indicate the pre-operative White Blood Cell (WBC) count closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: White Blood Cells (leukocytes) are part of the body's immune defense and are often elevated in the presence of infection. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results. The unit of measurement for WBC is x10^3/µl or 10^3/µl (1000 ul) or 10^3/mm^3 (1000/mm^3) or K/µl or K/mm3

SEQ. #: 570
Long Name: Hemoglobin
Short Name: RFHemoglobin
Definition: Indicate the pre-operative Hemoglobin level at the date and time closest to surgery but prior to anesthetic management (induction area or operating room). Capture only measured hemoglobin levels, not calculated values.

Intent/Clarification: The hemoglobin (Hgb) test may be used to screen for, diagnose, or monitor several conditions and diseases that affect red blood cells (RBCs) and/or the amount of hemoglobin in blood. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results. The unit of measurement for Hgb is g/dl or g/100 ml or g%.

SEQ. #: 575
Long Name: Last Hematocrit
Short Name: Hct
Definition: Indicate the pre-operative Hematocrit level at the date and time closest to surgery but prior to anesthetic management (induction area or operating room). Capture only measured hematocrit levels, not calculated values.

Intent/Clarification: Hematocrit (Hct) is the proportion of red cells in the blood. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results. The unit of measurement for Hct is %.

SEQ. #: 580
Long Name: Platelet Count
Short Name: Platelets
Definition: Indicate the platelet count closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: Platelets (plt) are a blood component instrumental in clot formation. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results. The unit of measurement for Platelets is x10^3/µl or 10^3/µl (1000 µl) or 10^3/mm^3 (1000/mm^3) or K/µl or K/mm3

SEQ. #: 585
Long Name: Total Albumin
Short Name: TotAlbumin
Definition: Indicate the total albumin closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: Albumin (alb), produced only in the liver, is the major plasma protein that circulates in the bloodstream. Albumin is essential for maintaining the oncotic pressure in the vascular system. A decrease in oncotic pressure due to a low albumin level allows fluid to leak out from the interstitial spaces into the peritoneal cavity, producing ascites. Albumin is also especially important in the transportation of many substances such as drugs, lipids, hormones, and toxins that are bound to albumin in the bloodstream. A low serum albumin indicates poor liver function. Decreased serum albumin levels are not seen in acute liver failure because it takes several weeks of impaired albumin production before the serum albumin level drops. The most common reason for a low albumin is chronic liver failure caused by cirrhosis. The serum albumin concentration is usually normal in chronic liver disease until cirrhosis and significant liver damage has occurred. The unit of measurement for Albumin is g/dl or g/100 ml or g%.

Timeframe - **Capture results up to 6 weeks prior to surgery provided there is no known acute liver disease process.**

SEQ. #: 590
Long Name: Last A1c Level
Short Name: A1cLvl
Definition: Indicate the pre-operative HbA1c level closest to the date and time prior surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: Glycosylated hemoglobin, HbA1c, is a form of hemoglobin used primarily to identify the average plasma glucose concentration over prolonged periods of time. It is formed in a non-enzymatic glycation pathway by hemoglobin's exposure to plasma glucose. Normal levels of glucose produce a normal amount of glycosylated

hemoglobin. As the average amount of plasma glucose increases, the fraction of glycosylated hemoglobin increases in a predictable way. This serves as a marker for average blood glucose levels over the previous months prior to the measurement. The HbA1c level is proportional to average blood glucose concentration over the previous four weeks to three months. The unit of measurement for A1C is %.

The 2010 American Diabetes Association Standards of Medical Care in Diabetes added the A1c ≥ 6.5% as a criterion for the diagnosis of diabetes.

Timeframe - Capture results up to 3 months prior to surgery.

SEQ. #: 595
Long Name: BNP
Short Name: BNP
Definition: Indicate the BNP value.

Intent/Clarification: Brain natriuretic peptide (BNP), now known as B-type natriuretic peptide or Ventricular Natriuretic Peptide (still BNP), is a 32-amino acid polypeptide secreted by the ventricles of the heart in response to excessive stretching of heart muscle cells (cardiomyocytes). The physiologic actions of BNP are similar to those of ANP and include decrease in systemic vascular resistance and central venous pressure as well as an increase in natriuresis. Thus, the net effect of BNP and ANP is a decrease in blood volume, which lowers systemic blood pressure and afterload, yielding an increase in cardiac output, partly due to a higher ejection fraction. The unit of measurement for BNP is pg/ml

An NT - proBNP is not the same as a BNP. T**here is no conversion factor for the comparison of BNP and NT-proBNP values.**

SEQ. #: 600
Long Name: Sodium
Short Name: Sodium
Definition - Indicate the Sodium closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room). If liver disease is present, then Sodium is required for Meld score calculation.

Intent/Clarification: The MELDNa**/**MELD-Na Score for Liver Cirrhosis adds sodium to the MELD model to evaluate liver cirrhosis severity. The sodium addition in the model was based on the registration data from the United Network for Organ Sharing. The formula MELD Na = MELD − Na − [0.025 × MELD × (140 − Na)] + 140. The unit of measurement for Sodium is mEq/L, or mmol/L.
https://www.bing.com/search?q=United+Network+for+Organ+Sharing&filters=sid%3a040e3c6e-ebe4-adea-13e6-351f0f50ad14&form=ENTLNK

SEQ. #: 605
Long Name: Last Creatinine Level
Short Name: CreatLst
Definition: Indicate the creatinine level closest to the date and time prior surgery but prior to anesthetic management (induction area or operating room). A creatinine level

should be collected on all patients, even if they have no prior history of renal disease. A creatinine value is a high predictor of a patient's outcome and is used in the predicted risk models.

Intent/Clarification: Creatinine (Cr) is a chemical waste molecule excreted by the kidneys that is generated from muscle metabolism. If the kidneys become impaired for any reason, the creatinine level in the blood will rise due to poor clearance by the kidneys. Abnormally high levels of creatinine thus warn of possible malfunction or failure of the kidneys. The unit of measurement for Creatinine is mg/dl or mg/100ml or mg%

SEQ. #: 610
Long Name: Total Bilirubin
Short Name: TotBlrbn
Definition: Indicate the total Bilirubin closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: Bilirubin (Tbili) testing checks for levels of bilirubin, an orange-yellow pigment, in blood. Bilirubin is a natural byproduct that results from the normal breakdown of red blood cells. As a normal process, bilirubin is carried in the blood and passes through the liver. Too much bilirubin may indicate liver damage or disease.
The unit of measurement for Bilirubin is mg/dl or mg/100 ml or mg%.

Timeframe - **Capture results up to 6 weeks prior to surgery provided there is no known acute liver disease process**

SEQ. #: 615
Long Name: INR
Short Name: INR
Definition: Indicate the International Normalized Ratio (INR) closest to the date and time prior to surgery but prior to anesthetic management (induction area or operating room).

Intent/Clarification: INR is the standard unit used to report the result of a prothrombin (PT) test. An individual whose blood clots normally and who is not on anticoagulation should have an INR of approximately 1. The higher the INR, the longer it takes blood to clot. As the INR increases above a given level, the risk of bleeding and bleeding-related events increases. As the INR decreases below a given level, the risk of clotting events increases.

SEQ. #: 620
Long Name: HIT Antibodies
Short Name: HITAnti
Definition: Indicate whether Heparin Induced Thrombocytopenia (HIT) is confirmed by antibody testing.

Intent/Clarification: Heparin induced thrombocytopenia (HIT) can be defined as any clinical event best explained by platelet factor 4 (PF4)／heparin-reactive antibodies (‘HIT antibodies’) in a patient who is or has recently received heparin. Thrombocytopenia is the most common ‘event’ in HIT and occurs in at least 90% of patients, depending upon the

definition of thrombocytopenia. A high proportion of patients with HIT can develop thrombosis. Alternative, non-heparin, anticoagulant therapy reduces the risk of subsequent thrombosis. The SRA (serotonin release assay) test is the most definitive HIT test. The timeframe is any time prior to surgery.
http://emedicine.medscape.com/article/1357846-overview

Choices are:

- Yes - Positive antibody testing (test was performed, HIT positive)
- No - Negative antibody testing (test was performed, HIT negative)
- NA - antibody testing not performed

SEQ. #: 625
Long Name: RF-MELD Score
Short Name: MELDScr
Definition: MELD score value calculated by software to indicate severity of liver disease.

Intent/Clarification: MELD is a validated liver disease severity scoring system that uses laboratory values for serum bilirubin, serum creatinine and the INR to predict survival. In patients with chronic liver disease, an increasing MELD score is associated with increasing risk of death.

MELD is not used to confirm liver disease, rather as a severity measure for patients with known liver disease.

≤ 15 predictive of 95% survival at 3 months

~ 30 predictive of 65% survival at 3 months

≥ 40 predictive of 10-15% survival at 3 months

MELD = 3.8[Ln serum bilirubin (mg/dL)] + 11.2[Ln INR] + 9.6[Ln serum creatinine (mg/dL)] + 6.4. Laboratory values of INR, total bilirubin and serum creatinine that are <1.0 are set to 1.0. In addition, serum creatinine levels >4.0 mg/dL are capped at 4.0 mg/dL, and patients on dialysis receive an assigned serum creatinine value of 4.0 mg/dL.

Reference: http://www.mayoclinic.org/medical-professionals/model-end-stage-liver-disease

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SEQ. #: 645
Long Name: Five Meter Walk Test Done
Short Name: FiveMWalkTest
Definition: Indicate whether the five-meter walk test was done.

Intent/Clarification: Timeframe - To code 'YES' to 5M walk test performed it should be done within 3 months of surgery.

Frailty is a risk factor for surgery that has been difficult to quantify. This test quantifies frailty prior to surgery in ambulatory patients. Prolonged times strongly correlate with increased risk and this risk factor will be assessed for possible inclusion in risk model.

Instructions:

1. Accompany the patient to the designated area, which should be well-lit, unobstructed,

and contain clearly indicated markings at 0 and 5 meters
2. Position the patient with his/her feet behind and just touching the 0-meter start line
3. Instruct the patient to “walk at your comfortable pace” until a few steps past the 5-meter mark (the patient should not start to slow down before the 5-meter mark)
4. Begin each trial on the word “Go”
5. Start the timer with the first footfall after the 0-meter line
6. Stop the timer with the first footfall after the 5-meter line
7. Repeat 3 times, allowing enough time for recuperation between trials. (If patient is unable to repeat x3, enter 1 or 2 times)

Note: Patient may use a walking aid (cane, walker). If the patient is receiving an IV drip, he/she should perform the test without the IV only if it can be interrupted temporarily without any potential risk to the patient, if not, then the patient may perform the test pushing the IV pole. If the time taken to walk 5 meters averages > 6 seconds, the patient is considered frail.

Choices are:

- Yes
- No
- Non-ambulatory patient (physically or medically unable to perform the test)

Reference: *Gait Speed as an Incremental Predictor of Mortality and Major Morbidity in Elderly*... Afilalo et al. J Am Coll Cardiol.2010; 56: 1668-1676

SEQ. #: 650
Long Name: Five Meter Walk Time 1
Short Name: FiveMWalk1
Definition: Indicate the time in seconds it takes the patient to walk 5 meters for the first of three tests.

SEQ. #: 655
Long Name: Five Meter Walk Time 2
Short Name: FiveMWalk2
Definition: Indicate the time in seconds it takes the patient to walk 5 meters for the second of three tests.

SEQ. #: 660
Long Name: Five Meter Walk Time 3
Short Name: FiveMWalk3
Definition: Indicate the time in seconds it takes the patient to walk 5 meters for the third of three tests.

Previous Cardiac Interventions

SEQ. #: 665
Long Name: Prev Cardiac Intervent

Short Name: PrCVInt
Definition: Indicate whether the patient has undergone any previous cardiovascular intervention, either surgical or non-surgical, which may include those done during the current admission.

Intent/Clarification: A patient who had previous invasive cardiac procedures (PCI or surgery) will have increased risk due to a variety of factors, such as repeated exposure to heparin potentiating incidence of heparin antibodies, heparin resistance or surgical adhesions.

This is intended to capture surgical and/or interventional procedures. Do not capture TEE or cath, IABP placement, Loop Recorder, and LifeVest in this field. Do not capture aborted or unsuccessful procedures.

Time frame – capture any occurrence between birth and entry to OR for index procedure.

Patient has a history of a CABG, then later a VAD, then a heart transplant. The patient is now having a CABG on his transplanted heart. Only count the prior transplant as a previous intervention.

The patient enters the operating room electively for an AVR. The same procedure was attempted at another hospital 6 months previously but was cancelled after discovering a porcelain aorta. Code Seq 805 previous Other Cardiac Intervention (not listed).

SEQ. #: 670
Long Name: Prev CAB
Short Name: PrCAB
Definition: Indicate whether the patient had a previous Coronary Bypass Graft prior to the current admission.

Intent/Clarification: This applies only to surgical approach to revascularization. Angioplasty or other catheter based coronary artery occlusion treatment does not apply.

SEQ. #: 675
Long Name: Prev Valve
Short Name: PrValve
Definition: Indicate whether the patient had a previous surgical replacement and/or surgical repair of a cardiac valve. This may also include percutaneous or transcatheter valve procedures.

Intent/Clarification: This may include percutaneous valve procedures such as percutaneous valvotomy or valvuloplasty, as well as surgical or transcatheter valve repair or replacement. Capture all procedures that apply. These do not have to be in chronological order.

SEQ. #: 695
Long Name: Prev Valve Procedure 1
Short Name: PrValveProc1

Definition: Indicate the first previous valve procedure.

Intent/Clarification: Indicate which specific valve procedure was performed:
No additional valve procedure(s)
Aortic valve balloon valvotomy/valvuloplasty
Aortic valve repair, surgical
Aortic valve replacement, surgical
Aortic valve replacement, transcatheter
Mitral valve balloon valvotomy/valvuloplasty
Mitral valve commissurotomy, surgical
Mitral valve repair, percutaneous
Mitral valve repair, surgical
Mitral valve replacement, surgical
Mitral valve replacement, transcatheter
Tricuspid valve balloon valvotomy/valvuloplasty
Tricuspid valve repair, percutaneous
Tricuspid valve repair, surgical
Tricuspid valve replacement, surgical
Tricuspid valve replacement, transcatheter
Tricuspid valvectomy
Pulmonary valve balloon valvotomy/valvuloplasty
Pulmonary valve repair, surgical
Pulmonary valve replacement, surgical
Pulmonary valve replacement, transcatheter
Pulmonary valvectomy
Other valve procedure **Update Oct 2020 may include Angiovac valve procedures**

SEQ. #: 700
Long Name: Prev Valve Procedure 2
Short Name: PrValveProc2
Definition: Indicate the second previous valve procedure or select "No additional valve procedures"

Intent/Clarification: If a second procedure was done, please select from the list above or select: No Additional Valve Procedure(s) - Software will grey out any additional selections.

SEQ. #: 705
Long Name: Prev Valve Procedure 3
Short Name: PrValveProc3
Definition: Indicate the third previous valve procedure or select "No additional valve procedures"

Intent/Clarification: If a third procedure was done, please select from the list above or select: No Additional Valve Procedure(s) - Software will grey out any additional selections.

SEQ. #: 710
Long Name: Prev Valve Procedure 4

Short Name: PrValveProc4
Definition: Indicate the fourth previous valve procedure or select "No additional valve procedures"

Intent/Clarification: If a fourth procedure was done, please select from the list above or select: No Additional Valve Procedure(s) - Software will grey out any additional selections.

SEQ. #: 715
Long Name: Prev Valve Procedure 5
Short Name: PrValveProc5
Definition: Indicate the fifth previous valve procedure or select "No additional valve procedures"

Intent/Clarification: If a fifth procedure was done, please select from the list above or select: No Additional Valve Procedure(s) - Software will grey out any additional selections.

SEQ. #: 775
Long Name: Previous PCI
Short Name: POCPCI
Definition: Indicate whether a previous Percutaneous Coronary Intervention (PCI) was performed any time prior to this surgical procedure. Percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary artery bypass graft for the purpose of mechanical coronary revascularization.

Intent/Clarification: An **attempted**, even if unsuccessful, PCI should be coded as a Previous CV intervention-PCI. This is to harmonize with ACC-NCDR.

SEQ. #: 780
Long Name: Previous PCI-Within This Episode of Care
Short Name: POCPCIWhen
Definition: Indicate whether the previous Percutaneous Cardiac Intervention (PCI) was performed within this episode of care. Episode of care is defined as continuous inpatient hospitalization which includes transfer from one acute care hospital to another.

Intent/Clarification: This field is intended to capture PCIs done during the same episode of care prior to the surgical procedure. Include patients who were transferred for surgery from another facility following PCI.

Do not code PCI performed after the surgical procedure here.

Do not code as the same episode of care if the patient is discharged home between interventions. Choices are:

- Yes, at this facility
- Yes, at some other acute care facility
- No

NOTE THAT SEQUENCE NUMBER 785 IS A CHILD TO SEQUENCE NUMBER 780.

SEQ. #: 785
Long Name: Previous PCI-Indication for Surgery
Short Name: POCPCIndSurg
Definition: Select the indication for surgery following the Percutaneous Cardiac Intervention (PCI).

Intent/Clarification: Indicate whether surgery was required due to:

- **PCI complication** - complication during PCI necessitating surgical intervention such as dissection or acute occlusion.
- **PCI failure with clinical deterioration** - PCI failed to yield expected and/or desired results, patient condition deteriorated, includes attempts to cross with the wire but unsuccessful.
- **PCI for STEMI, multi-vessel disease** - STEMI with primary PCI of culprit lesion and multi-vessel disease requiring CABG.
- **PCI failure without clinical deterioration** - PCI failed to yield expected and/or desired results, patient condition did not deteriorate, includes attempts to cross with the wire but unsuccessful.
- **PCI/Surgery staged procedure (not STEMI)** - PCI and surgical procedures performed in a staged fashion in a patient not experiencing STEMI.
- **Other** - other indication for surgery not described above.

SEQ. #: 790
Long Name: Previous PCI-Stent
Short Name: POCPCISt
Definition: Indicate whether an intracoronary stent was used during any of the previous Percutaneous Cardiac Interventions (PCI).

Intent/Clarification: A coronary stent is a tube-shaped device placed in the coronary arteries that supply blood to the heart, to keep the arteries open in the treatment of coronary heart disease. It is used in a procedure called percutaneous coronary intervention (PCI).

SEQ. #: 800
Long Name: Previous PCI-Interval
Short Name: POCPCIIn
Definition: Indicate the interval of time between the most recent PCI and the current surgical procedure.

Intent/Clarification: The choices are ≤ 6 hours or > 6 hours prior to OR entry. The timing of surgery after PCI may influence outcomes such as renal failure due to contrast given during PCI.

SEQ. #: 805
Long Name: Previous Other Cardiac
Short Name: POC

Definition: Indicate whether the patient had any other previous cardiac intervention.

Intent/Clarification: If the patient had any other procedure involving the heart and/or great vessels not mentioned above, choose this field.

Great vessels are vessels that are directly attached to the heart - Superior vena cava; Inferior vena cava; Pulmonary arteries**;** Pulmonary veins; Aorta.

These do not have to be in chronological order.

Implantable Loop Recorder, LifeVest, defibrillation or AED/ AICD shock for arrest or placement of IABP or **Update July 2020 catheter based temporary mechanical assist device** is not considered a previous CV intervention in Seq 805.

Update July 2020 Temporary mechanical assist devices that are placed open via implantation using an open surgical approach (transaxillary or transaortic), can be captured as Other Cardiac Intervention (not listed).

Note: The patient enters the operating room electively for an AVR. The same procedure was attempted at another hospital 6 months previously but was cancelled after discovering a porcelain aorta. Code previous Other Cardiac Intervention (not listed).

SEQ. #: 810
Long Name: Previous Other Cardiac Intervention 1
Short Name: POCInt1
Definition: Indicate the first other cardiac intervention that was performed.

Intent/Clarification: **Update August 2020 - If a patient has had multiples of the same type of intervention, coding once for each separate intervention is acceptable. For example, patient has had multiple previous cardioversions, code cardioversion one time in the grid.**

No additional interventions
Ablation, catheter, atrial arrhythmia
Ablation, catheter, other or unknown – such as Wolff-Parkinson-White (WPW) ablation
Ablation, catheter, ventricular arrthymia
Ablation, surgical, atrial arrhythmia
Ablation, surgical, other or unknown
Aneurysmectomy, LV
Aortic procedure, arch
Aortic procedure, ascending
Aortic procedure, descending
Aortic procedure, root
Aortic procedure, thoracoabdominal
Aortic Procedure, TEVAR
Aortic root procedure, valve sparing
Atrial appendage obliteration, Left, surgical
Atrial appendage obliteration, Left, transcatheter
Cardiac Tumor
Cardioversion(s)

Closure device, atrial septal defect
Closure device, ventricular septal defect
Congenital cardiac repair, surgical
ECMO
Implantable Cardioverter Defibrillator (ICD) with or without pacemaker
Myectomy
Permanent Pacemaker
Pericardial Window/Pericardiocentesis
Pericardiectomy
Pulmonary thromboembolectomy
Total Artificial Heart (TAH)
Transmyocardial Laser Revascularization (TMR)
Transplant heart & lung
Transplant, heart
Transplant, lung(s)
Ventricular Assist Device (VAD), BiVAD
Ventricular Assist Device (VAD), left
Ventricular Assist Device (VAD), right
Other Cardiac Intervention (not listed) – such as ethanol ablation, coronary artery brachytherapy and **Update July 2020 temporary mechanical assist devices that are placed open via implantation using an open surgical approach (transaxillary or transaortic)** and **Update August 2020 Infrarenal abdominal aorta procedures.**

SEQ. #: 815
Long Name: Previous Other Cardiac Intervention 2
Short Name: POCInt2
Definition: Indicate the second other cardiac intervention that was performed.

Intent/Clarification: If a second procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional selections.

SEQ. #: 820
Long Name: Previous Other Cardiac Intervention 3
Short Name: POCInt3
Definition: Indicate the third other cardiac intervention that was performed.

Intent/Clarification: If a third procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional

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SEQ. #: 825
Long Name: Previous Other Cardiac Intervention 4
Short Name: POCInt4
Definition: Indicate the fourth other cardiac intervention that was performed.

Intent/Clarification: If a fourth procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional selections.

SEQ. #: 830

Long Name: Previous Other Cardiac Intervention 5
Short Name: POCInt5
Definition: Indicate the fifth other cardiac intervention that was performed.

Intent/Clarification: If a fifth procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional selections.

SEQ. #: 835
Long Name: Previous Other Cardiac Intervention 6
Short Name: POCInt6
Definition: Indicate the sixth other cardiac intervention that was performed.

Intent/Clarification: If a sixth procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional selections.

SEQ. #: 840
Long Name: Previous Other Cardiac Intervention 7
Short Name: POCInt7
Definition: Indicate the seventh other cardiac intervention that was performed.

Intent/Clarification: If a seventh procedure was done, please select from the list above or select “No Additional Interventions,” software will grey out any additional selections.

Preoperative Cardiac Status

SEQ. #: 885
Long Name: Prior MI
Short Name: PrevMI
Definition: Indicate if the patient has had at least one documented previous myocardial infarction at any time prior to this surgery.

Intent/Clarification:
Indicate if the patient has a history of MI. Provider documentation should indicate MI. Do not code slight troponin increase and no EKG changes alone as MI without confirmation in the medical record by a physician or physician extender. Do not use phrases such as “cannot rule out”, “suggestive”, “probable”, “cannot exclude”, etc. to code MI.

SEQ. #: 890
Long Name: MI-When
Short Name: MIWhen
Definition: Indicate the time period between the last documented myocardial infarction and surgery

Intent/Clarification: Time of surgery is documented as the hour the patient entered the operating room. Select the time-interval category based on information available on when the MI occurred. MI occurrence is the time of diagnosis and/or when confirmation of the last MI is documented prior to surgery.

SEQ. #: 895
Long Name: Primary Coronary Symptom for Surgery
Short Name: CardSympTimeOfAdm
Definition: Indicate the patient's worse sympotom prior to surgery from Admission to OR Entry.

Intent/Clarification: Indicate the patient's cardiac presentation / symptoms. Choose the worst status. **Update August 2020 - Time Frame: The highest value from arrival at transferring facility / arrival to your facilty ~~admission~~ to OR Entry. Update September 2020 - For elective patients, choose the CAD presentation that is bringing them into the hospital.** If this is a subsequent episode of care, do not code the CAD Presentation from the previous episode of care.

If the patient presents with atypical symptoms of myocardial ischemia (i.e. only shortness of breath, upper abdominal pain, left arm pain, etc.) that is known and documented to be myocardial ischemia, and is considered to be an angina equivalent, code the selection that fits their presentation. If these symptoms are not thought to be or have not been proven to be the anginal equivalent, code "No Coronary Symptoms".

- **No coronary symptoms** – No coronary symptoms, no angina, no acute STEMI, non-STEMI, no anginal equivalent, and no other atypical chest pain.
- **Stable angina** – Angina without a change in frequency or pattern for the 6 weeks prior. Angina is controlled by rest and/or oral or transcutaneous medications.
- **Unstable angina** - There are three principal presentations of unstable angina.
    - Rest angina (occurring at rest and prolonged, usually >20 minutes)
    - New-onset angina (within the past 2 months, of at least Canadian Cardiovascular Society Class III severity)
    - Increasing angina (previously diagnosed angina that has become distinctly more frequent, longer in duration, or increased by 1 or more Canadian Cardiovascular Society class to at least CCS III severity)
- **Non-STEMI** - The patient was hospitalized for a non-ST elevation myocardial infarction (NSTEMI) as documented in the medical record.
- **ST-Elevation MI (STEMI)** - The patient presented with a ST elevation myocardial infarction (STEMI) or its equivalent as documented in the medical record.
- **Anginal Equivalent** - An anginal equivalent is a symptom such as shortness of breath (dyspnea), diaphoresis, extreme fatigue, or belching, occurring in a patient at high cardiac risk. Anginal equivalents are considered symptoms of myocardial ischemia. Anginal equivalents are considered to have the same importance as angina pectoris in patients presenting with elevation of cardiac enzymes or certain EKG changes which are diagnostic of myocardial ischemia. There needs to be supportive documentation in the medical record that the symptoms are representative of angina. For example, if the patient presents with the symptoms above and it is proven that the patient has documented obstructive CAD, then anginal equivalent may be coded even if there is no Provider documentation specifically stating that the symptoms are an anginal equivalent. For the patient with diabetes who presents with "silent angina", code anginal equivalent.
- **Other** – Aortic dissections, sudden death, heart block, arrhythmia, syncope, heart failure or other symptoms associated with non-coronary artery disease conditions such as Aortic or Mitral stenosis / insufficiency without CAD

Physician documentation that the patient is Canadian Cardiovascular Society (CCS) 3 which is a grading system for angina can coded YES to Seq 895. CCS Class is specific to patients having angina You will have to clarify with the physician as to the type of angina if you cannot determine the type based on the documentation in the medical record.

SEQ. #: 911
Long Name: Heart Failure
Short Name: HeartFail
Definition: Indicate whether there is physician documentation or report that the patient has a history of heart failure. Capture either right or left heart failure.

Intent/Clarification: Heart failure is described as unusual dyspnea on light exertion, recurrent dyspnea occurring in the supine position, fluid retention; or the description of rales, jugular venous distension, pulmonary edema on physical exam, or pulmonary edema on chest x-ray presumed to be cardiac dysfunction. A low ejection fraction alone, without clinical evidence of heart failure does not qualify as heart failure. An elevated BNP without other supporting documentation should not be coded as CHF.

Time frame – capture any occurrence between birth and entry to OR for index procedure.

NYHA Class documentation alone cannot be used for diagnosis for heart failure, you must have physician documentation that states heart failure. There needs to be documentation in the chart that the patient has been in or was in a state of heart failure.

Do not code heart failure for a diagnosis of Cardiomyopathy. A diagnosis of heart failure must be documented in the medical record to code heart failure. Cardiomyopathy may or may not be associated with a heart failure diagnosis.

Code “Unknown” when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 912
Long Name: Heart Failure Timing
Short Name: HeartFailTmg
Definition: Indicate whether heart failure is acute, chronic or both (acute on chronic)

Intent/Clarification:

- Acute heart failure is the rapid onset of symptoms and signs of heart failure and may occur with or without previous cardiac disease occurring within 2 weeks of surgery. Acute decompensated heart failure is a sudden worsening of the signs and symptoms of heart failure, which typically includes difficulty breathing (dyspnea), leg or feet swelling, and fatigue.
- Chronic heart failure develops gradually over time with symptoms of shortness of breath, lower extremity swelling and fatigue without an acute exacerbation within the 2 weeks prior to admission.
- Both involves patients with chronic heart failure who presents with acute or worsening symptoms within 2 weeks of surgery. This may be documented as acute on chronic heart failure.

SEQ. #: 913
Long Name: Heart Failure Type
Short Name: HeartFailType
Definition: Indicate the type of heart failure.

Intent/Clarification:

- Systolic: The left ventricle lacks the force to push enough blood into the circulation.
- Diastolic: The left ventricle is stiff and fails to relax sufficiently to allow adequate filling.
- Both: Components of both systolic and diastolic failure exist.
- Unavailable: The type of heart failure is not documented in the medical record.

There must be physician documentation in the medical record indicating if the heart failure is systolic, diastolic, or combined dysfunction. Physician diagnosis of HFpEF (diastolic HF) or HFrEF (systolic HF) can be used to code systolic or diastolic heart failure.

SEQ. #: 915
Long Name: Classification-NYHA
Short Name: ClassNYH
Definition: Indicate the patient's worst dyspnea or functional class, coded as the New York Heart Association (NYHA) classification documented by a MD/Provider within the past 2 weeks.

Intent/Clarification: There must be physician/ provider documentation in the medical record indicating the NYHA class. The NYHA Class is often used to document functional class and may or may not be associated with a diagnosis of heart failure.

Timeframe - select the **highest level** NYHA Class documented within the two weeks prior to entry to OR for index procedure.

- **Class I**: Patient has cardiac disease but without resulting limitations of ordinary physical activity. Ordinary physical activity (e.g., walking several blocks or climbing stairs) does not cause undue fatigue, palpitation, dyspnea, or anginal pain. Limiting symptoms may occur with marked exertion.
- **Class II**: Patient has cardiac disease resulting in slight limitation of ordinary physical activity. Patient is comfortable at rest. Ordinary physical activity such as walking more than two blocks or climbing more than one flight of stairs results in limiting symptoms (e.g., fatigue, palpitation, dyspnea, or anginal pain).
- **Class III**: Patient has cardiac disease resulting in marked limitation of physical activity. Patient is comfortable at rest. Less than ordinary physical activity (e.g., walking one to two level blocks or climbing one flight of stairs) causes fatigue, palpitation, dyspnea, or anginal pain.
- **Class IV**: Patient has dyspnea at rest that increases with any physical activity. Patient has cardiac disease resulting in inability to perform any physical activity without discomfort. Symptoms may be present even at rest. If any physical activity is undertaken, discomfort is increased.

FAQ Oct 2020 - What do I code when the NYHA is documented as NO or Class 0?
Answer - NYHA Class 0 will be coded as NYHA Class 1. NYHA Class NO will be coded as not documented.

SEQ. #: 930
Long Name: Cardiogenic Shock
Short Name: CarShock
Definition: Indicate if the patient developed cardiogenic shock prior to induction.

Intent/Clarification: Cardiogenic shock is defined as a sustained (>30 min) episode of hypoperfusion evidenced by systolic blood pressure <90 mm Hg and/or, if available, cardiac index <2.2 L/min per square meter determined to be secondary to cardiac dysfunction and/or the requirement for parenteral inotropic or vasopressor agents or mechanical support (e.g., IABP, extracorporeal circulation, VADs) to maintain blood pressure and cardiac index above those specified levels.

Note: Transient episodes of hypotension reversed with IV fluid or atropine do not constitute cardiogenic shock. The hemodynamic compromise (with or without extraordinary supportive therapy) must persist for at least 30 min.
ACCF/AHA 2013

- At the time of the procedure is defined as entry into OR for index procedure and prior to induction of anesthesia. Do not code cardiogenic shock after induction.
- This includes patients with cardiogenic shock who have been stabilized on IABP/inotropes at the time of the procedure.
- Do not code yes to cardiogenic shock for patients with a low cardiac index who are asymptomatic and do not require mechanical or inotropic support.
- Hemodynamic issues that could be contributed to anesthesia induction problems should not count in the preoperative status of the patient.
- Elective procedures should not be coded as cardiogenic shock.
- Do not code yes to cardiogenic shock just because the patient has a LVAD; the patient must meet the blood pressure and/or cardiac index parameters of the definition of cardiogenic shock.

For patients having non-cardiac procedures such as a CEA or interventional procedures such as Watchman or ICD that develop cardiogenic shock as defined above and require emergent surgical intervention, code cardiogenic shock at time of the procedure.

SEQ. #: 935
Long Name: Resuscitation
Short Name: Resusc
Definition: Indicate whether the patient required cardiopulmonary resuscitation before induction of anesthesia. Capture resuscitation timeframe: within 1 hour or 1-24 hours pre-op.

Intent/Clarification: Indicate whether the patient required cardiopulmonary resuscitation within 24 hours of the start of the operative procedure. The start of the

procedure begins with the induction of anesthesia. Capture resuscitation timeframe: within 1 hour of surgery or 1-24 hours pre-operatively.

- Resuscitation may include **complete** circulatory support such as ECMO/other mechanical assist devices (ex. Impella, LVAD) initiated emergently prior to surgery. Intra-aortic balloon counterpulsation (IABP) by itself does not qualify as complete circulatory support.
- Do not code yes for resuscitation started after induction of anesthesia. The goal is to identify patients who require CPR and/or mechanical circulatory support to maintain life in the 24-hour period preceding surgery.

ECMO: ECMO is to be captured as a status of 'Salvage' in sequence 1975 and as 'Resuscitation – Yes' in sequence 935. ECMO is a supportive modality and not a procedural type. The risk of the patient on ECMO is accounted for when 'Status = salvage' and should be left in the intended procedural category.

For patients having non-cardiac procedures such as a CEA or interventional procedures such as Watchman or ICD that require resuscitation as defined above and emergent surgical intervention, code resuscitation within 1 hour.

SEQ. #: 945
Long Name: Cardiac Arrhythmia
Short Name: Arrhythmia
Definition: Indicate whether the patient has a history of a cardiac rhythm disturbance prior to the induction of anesthesia.

Intent/Clarification:

- Yes - The intent is to capture the below arrhythmias – permanently paced rhythm, Ventricular Tachycardia/ Ventricular Fibrillation, Sick Sinus Syndrome, Atrial Flutter, Atrial Fibrillation, Second Degree Heart Block, Third Degree Heart Block
- No

SEQ. #: 947
Long Name: Cardiac Arrhythmia - Permanently Paced Rhythm
Short Name: ArrhythPPaced
Definition: Indicate whether the patient has a permanently paced rhythm, evidenced by pacemaker activity during heart rhythm evaluation.

Intent/Clarification:

- Yes
- No

SEQ. #: 950
Long Name: Cardiac Arrhythmia - VTach / VFib
Short Name: ArrhythVV
Definition: Indicate whether arrhythmia was VTach or VFib.

Intent/Clarification: V-tach rhythm must be sustained/persistent or paroxysmal and require some type of intervention (pharmacological and/or electrical shock) to interrupt and cease the arrhythmia. Do not include short runs of VT.

- None
- Remote - more than 30 days prior to procedure
- Recent - within 30 days of this procedure

SEQ. #: 955
Long Name: Cardiac Arrhythmia - Sick Sinus Syndrome
Short Name: ArrhythSSS
Definition: Indicate whether arrhythmia was sick sinus syndrome.

Intent/Clarification: Sick sinus syndrome is a collection of heart rhythm disorders caused by dysfunction in the SA node, the heart's main pacemaker. SSS may present as: Sinus bradycardia -- slow heart rates from the natural pacemaker of the heart. Tachycardias - fast heart rates**.** Bradycardia-tachycardia -- alternating slow and fast heart rhythms

- None
- Remote - more than 30 days prior to procedure
- Recent - within 30 days of this procedure

SEQ. #: 960
Long Name: Cardiac Arrhythmia - AFlutter
Short Name: ArrhythAFlutter
Definition: Indicate whether arrhythmia was atrial flutter.

Intent/Clarification: Atrial flutter (AFL) is an abnormal heart rhythm that occurs in the atria of the heart. When it first occurs, it is usually associated with a fast heart rate or tachycardia (beats over 100 per minute) which falls into the category of supra-ventricular tachycardias. While this rhythm occurs most often in individuals with cardiovascular disease (e.g. hypertension, coronary artery disease, and cardiomyopathy) and diabetes, it may occur spontaneously in people with otherwise normal hearts. It is typically not a stable rhythm, and frequently degenerates into atrial fibrillation (AF). However, it does rarely persist for months to years. If rhythm is described as fib/flutter, code fibrillation.

- None
- Remote - more than 30 days prior to procedure
- Recent - within 30 days of this procedure

SEQ. #: 961
Long Name: Cardiac Arrhythmia - Atrial Fibrillation
Short Name: ArrhythAtrFib
Definition: Indicate whether arrhythmia was atrial fibrillation.

Intent/Clarification:

- None
- Remote - more than 30 days prior to procedure
- Recent - within 30 days of this procedure

SEQ. #: 965

Long Name: Cardiac Arrhythmia - Second Degree Heart Block
Short Name: ArrhythSecond
Definition: Indicate whether arrhythmia was second degree heart block.

Intent/Clarification: In second degree heart block, some signals from the atria don't reach the ventricles. This causes "dropped beats." On an ECG, the P wave isn't followed by the QRS wave, because the ventricles weren't activated. There are two types: Type I second-degree heart block, or Mobitz Type I, or Wenckebach's AV block. Electrical impulses are delayed more and more with each heartbeat until a beat is skipped. This condition is not too serious but sometimes causes dizziness and/or other symptoms. Type II second-degree heart block, or Mobitz Type II. This is less common than Type I but generally more serious. Because electrical impulses can't reach the ventricles, an abnormally slow heartbeat may result. In some cases, a pacemaker is needed.

- None
- Remote -more than 30 days prior to procedure
- Recent -within 30 days of this procedure

SEQ. #: 970
Long Name: Cardiac Arrhythmia - Third Degree Heart Block
Short Name: ArrhythThird
Definition: Indicate whether arrhythmia was third degree heart block.

Intent/Clarification: Heart block is applicable only if the patient has or did have 3rd degree heart block (complete heart block). Complete heart block, also referred to as third-degree heart block, or third-degree atrioventricular (AV) block, is a disorder of the cardiac conduction system where there is no conduction through the AV node. Therefore, complete dissociation of the atrial and ventricular activity exists.

- None
- Remote- more than 30 days prior to procedure
- Recent - within 30 days of this procedure

SEQ. #: 971
Long Name: Atrial Fibrillation - Type
Short Name: ArrhythAFib
Definition: Indicate whether arrhythmia was atrial fibrillation and if so, which type.

Intent/Clarification: If the diagnosis of atrial fibrillation is present code the type:

- Paroxysmal: Paroxysmal AF is defined as AF that terminates spontaneously or with intervention within seven days of onset. Episodes may recur with variable frequency.
- Persistent: - Persistent AF is defined as AF that fails to self-terminate within seven days. Episodes often require pharmacologic or electrical cardioversion to restore sinus rhythm. Included in this category are Persistent Afib, Early Persistent Afib, Long-Standing Persistent Afib, Permanent Afib, and Chronic Afib. Data Source: Heart Rhythm. 2017;S1547

Seq # 972
Long Name: Patient in A-fib at OR Entry
Short Name: AFibRecOREntry

Definition - Indicate whether patient was in A-fib at the time of OR entry.

Intent/Clarification: Indicate whether the patient **is in A-fib, A-fib / flutter, or A-flutter** at the time of OR entry**.** Use the first rhythm documented on the anesthesia record to determine if the patient is in Afib, Afib / flutter, or A-flutter at the time of entry to OR. If there is no documentation on the anesthesia record, then use the rhythm documented closest to OR entry to determine if patient in Afib, Afib / flutter, or A-flutter.

Preoperative Medications

General Information:

Contraindications for pre-op medication requires documentation of a contraindication for the class of medications when applicable such as statin, beta blockers, ADP inhibitors etc. not just one medication in the medication class. For example, a documented contraindication for Toprol at pre-op would need to be documented as a contraindication for Beta Blockers, instead of one drug in the medication class.

Patient refusal of medication - Patient refusal of medication can be captured as contraindicated if the refusal is clearly documented in the medical record. For example, "Patient educated on importance of taking pre-op beta blocker and patient refused to take the medication."

SEQ. #: 1020
Long Name: Meds-ACE Inhibitors or ARB Within 48 Hours
Short Name: MedACEI48
Definition: Indicate whether the patient received ACE Inhibitors or ARB within 48 hours prior to OR Entry.

Intent/Clarification: ACE and ARBs are used in the treatment of hypertension, congestive heart failure (reduces the workload of the heart). The drug action is to inhibit the release of the hormone angiotensin II that constricts blood vessels, causing an increase in blood pressure. Therefore, blood vessels dilate to increase systemic blood flow to the heart. Some ACE inhibitors have additional diuretic components to increase the elimination of excess fluid. Studies have shown that preoperative use of ACEI/ARB is associated with a 27.6% higher risk for Acute Kidney Injury (AKI) postoperatively. Stopping ACEI or ARB before cardiac surgery may reduce the incidence of AKI. This includes renin inhibitors.

- **Yes** - **Update Oct 2020** Capture ~~those who are prescribed to take medications on a regular schedule and are presumed to be at a therapeutic level~~, **patients who receive an ACE/ARB within 48 hours prior to entry into the OR.**
- **No** - did not receive an ACE inhibitor or ARB within 48 hours prior to OR entry.
- **Contraindicated -** Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist. You can code contraindicated for the medication not given by the health care

professional as a result of the order parameters not being met. (i.e. Hold ACE for BP< 110 systolic and BP documented as 100 systolic).

- **Unknown -** Code "Unknown" when there is conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history

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SEQ. #: 1025
Long Name: Meds- Amiodarone Prior To Surgery
Short Name: MedAmiodarone
Definition: Indicate whether and when the patient received Amiodarone therapy prior to surgery. Dronedarone (Multaq) may be coded as Amiodarone.

Intent/Clarification: Intended to capture **ongoing** medication administration prior to surgery. Amiodarone may play a role in reducing the risk of post-operative arrhythmias, notably A-Fib.

- **Yes: on home therapy –** the patient is on Amiodarone at home
- **Yes: therapy started this admission -** can include patients where a preoperative protocol was initiated; this allows differentiation from those patients on long term home therapy.
- **No** - Not on home therapy or therapy started this admission. A single dose prior to surgery such as in ED does not count as "Yes,"
- **Unknown** - conflicting information in the medical record and/or with the patient/family and/or patient/family unable to provide history.

SEQ. #: 1030
Long Name: Meds-Beta Blockers Within 24 Hours
Short Name: MedBeta
Definition: Indicate whether or not the patient received beta blockers within 24 hours preceding incision time, or if beta blocker was contraindicated.

Intent/Clarification: NQF Endorsed Measure - Part of the medication bundle in the STS Composite Quality Rating (Star Rating).
Beta blockers have been proven to increase survival in cardiac patients. For the treatment of:

1. High blood pressure
2. Treating chest pain or angina
3. Controlling irregular heart rhythms, prevention of post op Afib
4. Slowing ventricular rate response
5. Treating congestive heart failure

- **Yes**- include those who received within 24 hours prior to or at the same time as ***incision in the OR***. This can include one-time doses given prior to or at the same time as ***incision in OR***
- **No** – patient did not receive prior to ***incision in the OR.***
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist. Documents created by hospitals used to track Core Measure Information may be

used but would still have to be countersigned by physician, Nurse Practitioner, Anesthesia, Physician Assistant. You can code contraindicated for the medication not given by the health care professional as a result of the order parameters not being met **(**i.e. Hold BB for HR < 50 and HR documented at 45).

Note: Code no for Emergent or Emergent Salvage cases that do not receive a beta blocker within 24 hours, these cases are removed from the denominator (excluded) from the pre-op beta blocker metric.

SEQ. #: 1035
Long Name: Meds-Beta Blocker Therapy For More Than 2 Weeks Prior To Surgery
Short Name: MedBetaTher
Definition: Indicate whether the patient received beta blocker therapy for at least 2 weeks prior to surgery.

Intent/Clarification: Studies have shown that the abrupt discontinuation of Beta-Blockers during the perioperative period in patients who were on chronic Beta-Blocker therapy prior to surgery can lead to increased mortality during the intraoperative and postoperative periods. The American College of Cardiology/American Heart Association has given the continuation of Beta-Blocker therapy throughout the perioperative period a Class I recommendation.

Anti-anginal medications: beta blockers, calcium channel blockers, long acting nitrates and “other antianginal medication such as Ranexa” are to be captured if the patient is on them at home > 2 weeks prior to admission, even if they are stopped prior to surgery. Capturing these home meds demonstrates that the physicians caring for these patients were appropriately attempting to manage the patient’s CAD.

- **Yes** - Capture those who are prescribed a Beta-Blocker on a regular schedule (daily) and are presumed to be at a therapeutic level, for at least 2 weeks preceding entry into the OR. Do Not Include a one-time dose.
- **No** – Beta-Blocker was prescribed but patient is not taking a daily dose or not prescribed Beta-Blocker, within the two weeks preceding entry into OR.
- **Contraindicated**- Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record, notation of a medication allergy prior to arrival, by Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.
- **Unknown** – conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1040
Long Name: Meds-Calcium Channel Blocker Therapy For More Than 2 Weeks Prior To Surgery
Short Name: MedCChanTher
Definition: Indicate whether the patient received calcium channel blocker therapy for at least 2 weeks prior to surgery.

Intent/Clarification: Calcium channel blockers (CCB), calcium channel antagonists or calcium antagonists are medications that disrupts the movement of calcium (Ca2+) through calcium channels. Calcium channel blockers are used as antihypertensive drugs, i.e. as medications to decrease blood pressure in patients with hypertension. CCBs are particularly effective against large vessel stiffness, one of the common causes of elevated systolic blood pressure in elderly patients. Calcium channel blockers are also frequently used to alter heart rate, to prevent cerebral vasospasm, and to reduce chest pain caused by angina pectoris.

Anti-anginal medications: beta blockers, calcium channel blockers, long acting nitrates and "other antianginal medication such as Ranexa" are to be captured if the patient is on them at home > 2 weeks prior to admission, even if they are stopped prior to surgery. Capturing these home meds demonstrates that the physicians caring for these patients were appropriately attempting to manage the patient's CAD.

- **Yes** - Capture those who are prescribed a calcium channel blocker on a regular schedule and are presumed to be at a therapeutic level, for at least 2 weeks preceding entry into the OR.
- **No** – Patient did not receive a Calcium Channel Blocker for at least 2 weeks preceding entry into OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.
- **Unknown** – conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1045
Long Name: Meds-Long-Acting Nitrate Therapy For More Than 2 Weeks Prior To Surgery
Short Name: MedLongActNit
Definition: Indicate whether the patient received long-acting nitrate therapy for at least 2 weeks prior to surgery.

Intent/Clarification: Anti-anginal medications: beta blockers, calcium channel blockers, long acting nitrates and "other antianginal medication such as Ranexa " are to be captured if the patient is on them at home > 2 weeks prior to admission, even if they are stopped prior to surgery. Capturing these home meds demonstrates that the physicians caring for these patients were appropriately attempting to manage the patient's CAD.

- **Yes** - Capture those who are prescribed to take medications on a regular schedule and are presumed to be at a therapeutic level, for at least 2 weeks preceding entry into the OR. Nitropaste or Nitropatch are long-acting nitrates. Do Not include a one-time dose
- **No** – Patient did not receive a Long-Acting Nitrate for at least 2 weeks preceding entry into OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or

Pharmacist.
- **Unknown** – conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1050
Long Name: Meds-Nitrates-I.V. Within 24 Hours
Short Name: MedNitIV
Definition: Indicate whether the patient received IV Nitrates within 24 hours preceding surgery.

Intent/Clarification: Nitrates act by increasing dilatation of the coronary arteries, thereby increasing blood flow to the myocardium and decreasing myocardial ischemic changes. Trade name is Nitroglycerin.

- **Yes -** Capture those who receive IV Nitrates 24 hours preceding entry into the OR. **Update Oct 2020 Do NOT include one-time boluses of Nitroglycerin.**

- **No** – Patient did not receive IV Nitrates within 24 hours preceding entry into OR.

SEQ. #: 1055
Long Name: Meds-Other Antianginal Medication Therapy For More Than 2 Weeks Prior To Surgery
Short Name: MedOthAntiang
Definition: Indicate whether the patient received any other antianginal medication therapy for at least 2 weeks prior to surgery.

Intent/Clarification: Anti-anginal medications: beta blockers, calcium channel blockers, long acting nitrates and “other antianginal medication such as Ranexa” are to be captured if the patient is on them at home > 2 weeks prior to admission, even if they are stopped prior to surgery. Capturing these home meds demonstrates that the physicians caring for these patients were appropriately attempting to manage the patient’s CAD.

- **Yes** - Capture those who are prescribed to take any other antianginal medication on a regular schedule and are presumed to be at a therapeutic level, for at least 2 weeks preceding entry into the OR. Do Not Include a one-time dose.
- **No** – Patient did not receive any other antianginal medication therapy for at least 2 weeks preceding entry into OR. Do not capture if patient was given a sublingual, IV, or short acting formula of one of these medications.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.
- **Unknown** – – conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1060
Long Name: Meds-ADP Inhibitors Within Five Days

Short Name: MedADP5Days
Definition: Indicate whether the patient has received ADP Inhibitors within 5 days preceding surgery.

Intent/Clarification: ADP stands for Adenosine Diphosphate. The anticoagulant properties of these medications may increase the risk of bleeding by inhibiting platelet aggregation (clotting). This category includes P2Y12 inhibitors. They are often used to treat patients with a history of atherosclerotic cardiovascular disease and potentially reduce the incidence of major cardiovascular events (stroke, peripheral arterial disease events). Peak drug levels are reached within 3-7 days of initiated maintenance dosing, while termination of drug affects is not seen for 5 days after last dose. Cangrelor is a short acting ADP inhibitor that is not captured.

- **Yes** - Capture those who took ADP inhibitors within 5 days of entry into the OR. **Update Oct 2020 - This includes a one-time dose of ADP within 5 days of surgery.** Cangrelor is a short acting ADP inhibitor that is not captured.
- **No** - patient did not receive an ADP inhibitor within 5 days preceding entry into OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist
- **Unknown** – conflicting information in the medical record and/or with the patient/family or no information available

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SEQ. #: 1065
Long Name: Meds-ADP Inhibitors Discontinuation
Short Name: MedADPIDis
Definition: Indicate the number of days prior to surgery ADP Inhibitor use was discontinued. If less than 24 hours, enter "0".

Intent/Clarification: Peak drug levels are reached within 3-7 days of initiated maintenance dosing, while termination of drug affects is not seen for 5 days after last dose, which may increase risk of bleeding. Cangrelor is a short acting ADP inhibitor that is not captured.

Each day of discontinuation is counted by starting each day at midnight. For example, a patient receives last dose on 4/27 at 1:15pm. Surgery is 4/29 at 730 am. Code as 2 days counting each day starting at midnight. Day one is 4/28, Day two is 4/29.

SEQ. #: 1070
Long Name: Meds-Aspirin Within Five Days
Short Name: MedASA
Definition: Indicate whether or not the patient received Aspirin or Ecotrin within 5 days preceding surgery.

Intent/Clarification: Anti-inflammatory, analgesic and antiplatelet action. Half-life of aspirin products is 5-7 days. Aspirin use may predispose patient to post op bleeding.

- **Yes** - Capture those who took Aspirin or Ecotrin within 5 days of entry into the OR. The minimum dose should be at least 75 mg (i.e. Aggrenox, which is only

25mg, should not be included).
- **No** – Patient did not receive Aspirin within 5 days preceding entry into the OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist
- **Unknown** – conflicting information in the medical record and/or with the patient/family or no information available.

SEQ. #: 1071
Long Name: Meds-Aspirin Discontinuation
Short Name: MedASADis
Definition: Indicate the number of days prior to surgery Aspirin use was discontinued. If less than 24 hours, enter "0".

Intent/Clarification: - Each day of discontinuation is counted by starting each day at midnight. For example, a patient receives last dose on 4/27 at 1:15pm. Surgery is 4/29 at 730 am. Code as 2 days counting each day starting at midnight. Day one is 4/28, Day two is 4/29.

FAQ August 2020 - Patient receives aspirin at 1:15 PM the day before surgery with an AM OR time at 0808. Is that to be counted as "1" day of discontinuance (per the midnight instruction) or "0" as it is less than 24 hours.
Answer – If it is clear in the documentation that the aspirin was given < 24 hours, then code “0”. If documentation is unclear, then use the day discontinuation counting method as above.

SEQ. #: 1072
Long Name: Meds-Aspirin One-Time Dose
Short Name: MedASAOnce
Definition: Indicate whether the patient received a one-time dose of Aspirin and is not on daily aspirin.

Intent/Clarification: -

SEQ. #: 1073
Long Name: Meds-Glycoprotein IIb/IIIa Inhibitor Within 24 Hours
Short Name: MedGP
Definition: Indicate whether the patient received Glycoprotein IIb/IIIa inhibitors within 24 hours preceding surgery.

Intent/Clarification:
- **Yes**: if the patient received an IIb/IIIa inhibitor within 24 hours of OR entry date and time.
- **No**

SEQ. #: 1075

Long Name: Meds-Anticoagulants Within 48 Hours
Short Name: MedACoag
Definition: Indicate whether the patient received IV and/or subq anticoagulants within 48 hours preceding surgery. Do NOT include Coumadin or one-time boluses of Heparin.

Intent/Clarification: Anticoagulant therapy inhibits platelet aggregation and clot formation, is used to treat and prevent blood clots, decreasing the viscosity of the blood. These medications may increase the risk of bleeding. **Bivalirudin (Angiomax) will be captured here.**

- **Yes**: Only capture those who are given IV and/or Sub-Q anticoagulants on a regular schedule and are presumed to be at a therapeutic level, within 48 hours preceding entry into the OR. Do NOT include Coumadin or one-time boluses of Heparin.
- **No**: Patient did not receive IV and/or Sub-Q anticoagulants within 48-hour preceding entry into the OR. Do not capture one-time heparin or one-time Lovenox/Enoxaparin or other subq or IV anticoagulants doses used during the cardiac cath or any time within 48 hours preceding surgery.

SEQ. #: 1080
Long Name: Meds-Anticoagulants-Medication Name
Short Name: MedACMN
Definition: Indicate the name of the anticoagulant the patient received within 48 hours preceding surgery.

Intent/Clarification:

- Heparin (Unfractionated)
- Heparin (Low Molecular)
- Both - Both unfractionated and low molecular heparin.
- Other – Includes Angiomax

SEQ. #: 1091
Long Name: Meds-Warfarin (Coumadin) Within 5 Days
Short Name: MedCoum5Days
Definition: Indicate whether the patient has received Warfarin (Coumadin) within 5 days preceding surgery.

Intent/Clarification: This is collected to capture the risk of bleeding related to anticoagulation therapy.

- **Yes** - Capture those who took Coumadin within 5 days preceding surgery.
  No – Patient did not receive Coumadin within 5 days prior to OR entry date and time.
- **Unknown** – Conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1092
Long Name: Meds-Warfarin (Coumadin) Discontinuation
Short Name: MedCoum5Dis
Definition: Indicate the number of days prior to surgery Warfarin (Coumadin) use was discontinued. If less than 24 hours, enter "0".

Intent/Clarification: Each day of discontinuation is counted by starting each day at midnight. For example, a patient receives last dose on 4/27 at 1:15pm. Surgery is 4/29 at 730 am. Code as 2 days counting each day starting at midnight. Day one is 4/28, Day two is 4/29.

SEQ. #: 1093
Long Name: Meds-DOAC Within 5 Days
Short Name: MedDOAC
Definition: Indicate whether the patient has received DOAC within 5 days preceding surgery.

Intent/Clarification: Direct oral anticoagulant (DOAC) drugs such as Xarelto (rivaroxaban), Eliquis (apixaban), Pradaxa (dabigatran etexilate), and Savaysa (edoxaban) are alternatives to warfarin. They are collectively referred to as novel oral anticoagulants (NOACs) or direct acting oral anticoagulants (DOACs). They have been shown to be as good as or possibly better than Coumadin with less serious side effects. The newer anticoagulants (NOACs/DOACs), are more expensive than the traditional ones and should be used with care in patients with kidney problems. This includes oral Direct Factor Xa inhibitors (“xabans “) and oral Thrombin Inhibitors.

- **Yes** - Capture those who took DOAC within 5 days of OR entry date and time.
- **No** – Patient did not receive a DOAC within 5 days prior to OR entry date and time.
- **Unknown** – Conflicting information in the medical record and/or with the patient/family or no information is available

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SEQ. #: 1094
Long Name: Meds- DOAC Discontinuation
Short Name: MedDOAC5Dis
Definition: Indicate the number of days prior to surgery DOAC use was discontinued. If less than 24 hours, enter "0".

Intent/Clarification: Each day of discontinuation is counted by starting each day at midnight. For example, a patient receives last dose on 4/27 at 1:15pm. Surgery is 4/29 at 730 am. Code as 2 days counting each day starting at midnight. Day one is 4/28, Day two is 4/29.

SEQ. #: 1125
Long Name: Meds-Thrombolytics Within 24 Hours
Short Name: MedThrom
Definition: Indicate whether the patient received thrombolytics within 24 hours preoperatively.

Intent/Clarification: Indicate whether the patient received thrombolytics within 24 hours preceding entry into the OR. Thrombolytic (fibrinolytic) therapy is the use of drugs to break up or dissolve blood clots, which are the main cause of both heart attacks and stroke. It can predispose a patient to bleeding if given within 24 hours prior to surgery.

There are three major classes of thrombolytic drugs: tissue plasminogen activator (tPA), streptokinase (SK), and urokinase (UK). **This includes one-time dose.**

- **Yes** - Capture those who received thrombolytics within 24 hours preceding of OR entry date and time.
- **No** – Patient did not receive thrombolytics within 24 hours preceding of OR entry date and time.

SEQ. #: 1130
Long Name: Meds-Inotropes Within 48 Hours
Short Name: MedInotr
Definition: Indicate whether the patient received IV inotropic agents within 48 hours preceding surgery.

Intent/Clarification: Indicate whether the patient received IV positive inotropic agents within 48 hours preceding entry into the OR. Positive Inotropic agent actions act at the cellular level, increasing intracellular calcium. Cardiovascular effects range from increasing or decreasing the heart rate, increasing force of the heart muscle contraction, peripheral or extremity arterial or venous constriction. The degree to which these systems are affected are dose dependent. As well, these drugs may lose their cardiovascular effect causing a negative response at higher dosing levels. Initiation of these drugs typically is in response to some hemodynamic instability in the patient.

Includes positive inotrophic and vasoactive medications that have positive inotrophic properties such as Dopamine, Neosynephrine, Epinephrine, Norepinephrine, Dobutamine, Isoproterenol, Vasopressin, Milrinone, and Levosimendan.

This field is in the risk models. Use of inotropic agents preoperatively is associated with increased risk of mortality and morbidity- including renal failure, prolonged vent, reoperation, and length of stay.

- **Yes** - Capture those who received IV inotropic agent(s), within 48 hours preceding OR entry date and time.
- N**o** – Patient did not receive Inotropes within 48hours preceding OR entry date and time.

SEQ. #: 1135
Long Name: Meds-Lipid Lowering Within 24 Hours
Short Name: MedLipid
Definition: Indicate whether or not the patient received lipid lowering medication within 24 hours preceding surgery.

Intent/Clarification: Capture medications administered to lower the total cholesterol, LDL, HDL or triglyceride levels. Patient may be on prescribed medication and have normal cholesterol values, these patients should still be coded as ““Yes,”” for dyslipidemia.

- **Yes** - Capture those who are prescribed to a lipid-lowering medication on a regular schedule and are presumed to be at a therapeutic level 24 hours

preceding entry into the OR. Do Not Include a one-time dose.
- **No** – Patient did not receive a lipid lowering medication within 24 hours preceding entry into the OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist
- **Unknown** – Conflicting information in the medical record and/or with the patient/family or no information is available.

SEQ. #: 1141
Long Name: Meds-Lipid Lowering-Medication Type
Short Name: MedLipType
Definition: Indicate the type of lipid lowering medication the patient received within 24 hours preceding surgery.

Intent/Clarification:
- Statin
- Statin + Other
- Non-Statin/Other

Repatha **Update September 2020 and other PCSK9 inhibitors** are captured as a non-statin/other. For patient's who have been taking Repatha appropriately, once every 2 weeks, code Yes to lipid lowering medication since they are taking it appropriately, once every 2 weeks, and should be therapeutic.

Although, red yeast rice contains the same cholesterol-lowering ingredient called monacolin K that is in a statin called lovastatin, for the purposes of the STS if the patient is prescribed red yeast rice as a lipid lowering agent, code this as a non-statin/other agent.

SEQ. #: 1143
Long Name: Meds-Steroids Within 24 Hours
Short Name: MedSter
Definition: Indicate whether the patient was taking steroids within 24 hours of surgery. This does not include a one-time dose related to prophylaxis therapy (i.e. for IV dye exposure during cath procedure or surgery pre-induction period). Non-systemic medications are not included in this category (i.e., nasal sprays, topical creams).

Intent/Clarification: Systemic delivery only. Non-systemic delivery is not included in this data element. Non-systemic delivery includes topical creams, nasal sprays, inhalers or ophthalmic or otic drops. Do not include one-time systemic dose as part of clinical pathway guideline or procedure/surgical preparatory order.
- **Yes** - Capture those who took **systemic steroids** within 24 hours preceding entry into OR and are presumed to be at a therapeutic level. Do Not Include a one-time dose.
- **No** – Patient did not receive a systemic steroid within 24 hours preceding entry into OR.
- **Contraindicated** - Documented evidence of contraindication: If a contraindication

is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

- **Unknown** – Conflicting information in the medical record and/or with the patient/family or no information is available.

Hemodynamics/Cath/Echo

****General Information: All Hemodynamic values for ejection fraction, pulmonary artery pressure, valve insufficiency and stenosis etc. should be captured from studies done as described below. Any test that provides hemodynamic measurements may be used.**

<u>Capturing of Hemodynamic/Cath/ECHO results:</u>

Source Document Priority for Coding:

1. Pre-op results captured from objective studies (cath, echo, nuclear study, etc.) closest and prior to OR Entry, within 6 months of OR date (while it is preferred that the cath and echo be done within 6 months, they can be used for up to one year).
2. Use the OR pre-incision results if pre-incision results change the planned surgery. For example, if pre-op MV regurgitation was mild and pre-incision MV regurgitation is severe and the surgeon decides to do a MV Repair – code severe for MV regurgitation.
3. Use the OR pre-incision results if no other values are available or if the valves were not visualized on any of the pre- operative exams regardless if planned surgery was changed or not.
4. If no other results are available, then Surgeon documentation should be used.

Example:
Echo from 9/21 has all needed results – abstract these results.
Echo from 9/30 has updated EF but no other results – change EF result to match update result.
10/1 Pre incision TEE has updated MV degree of insufficiency and planned surgery was changed related to findings on the TEE – Abstract ONLY the MV degree of insufficiency from these results since the planned surgery was changed as a result of this finding.

For Hemodynamic/Cath/ECHO values that are recorded as greater than or less than a value, code the value just below or above the reported value. For example, if echo reports a RVSP of < 35, code as 34, in addition if it is documented as > 35, then code 36.

For cath reports that have a descriptive term such as normal documented in the impression / conclusion / summary and the detail portion of the report says 70%, use the numerical values first and capture as 70%. Use descriptive terms when you have no numerical values.

If Audited be sure to include all the Cath, Echo, TEE, and TTE results from 6 months pre procedure.

SEQ. #: 1145
Long Name: Cardiac Catheterization Performed
Short Name: CarCathPer
Definition: Indicate whether cardiac catheterization and/or CT angio was performed.

Intent/Clarification: Diagnostic coronary angiography is defined as the passage of a catheter into the aortic root or other great vessels for the purpose of angiography of the native coronary arteries or bypass grafts supplying native coronary arteries.

While it is preferred that the cath be done within 6 months, it can be used for up to one year. Do not include stand-alone right heart catheterization in this field; include coronary angiogram either done with or without right and/or left heart pressures. In the absence of a cardiac cath, a CT angio may be captured in this field.

SEQ. #: 1150
Long Name: Cardiac Catheterization Date
Short Name: CarCathDt
Definition: Indicate the date cardiac catheterization was performed.

Intent/Clarification: If more than one was performed, capture the date closest to surgery. Do not include stand-alone RHC (right heart caths) in this field. While it is preferred that the cath be done within 6 months, they can be used for up to one year. If no cardiac catheterization was performed, then the date the CT angio was performed can be coded in this field.

Required date format: mm/dd/yyyy.

If month and year are known code month/01/year. If only the year is known code 01/01/Year. Leave Blank if you have no information on the month, day, or year of the cath.

SEQ. #: 1155
Long Name: Coronary Anatomy/Disease Known
Short Name: CorAnatDisKnown
Definition: Indicate whether coronary artery anatomy and/or disease is documented and available prior to surgery.

Intent/Clarification: Indicate if coronary artery anatomy and/or disease is documented or confirmed by testing **prior** to surgery**.** Code Yes for patients who have no coronary artery disease if this has been confirmed by testing.

Sometimes the results are known and verbally communicated to the surgeon, but the Cath Lab Report is not documented in the medical record until after surgery has started; this is particularly true for emergent cases. This can be captured even if dictation was not completed until after the surgery. Results dictated following the procedure may be used.

SEQ. #: 1170
Long Name: Num Dis Vessels
Short Name: NumDisV
Definition: Indicate the number of diseased major native coronary vessel systems. A vessel that has ever been considered diseased, should always be considered diseased. See TM for time frame and source document priority.

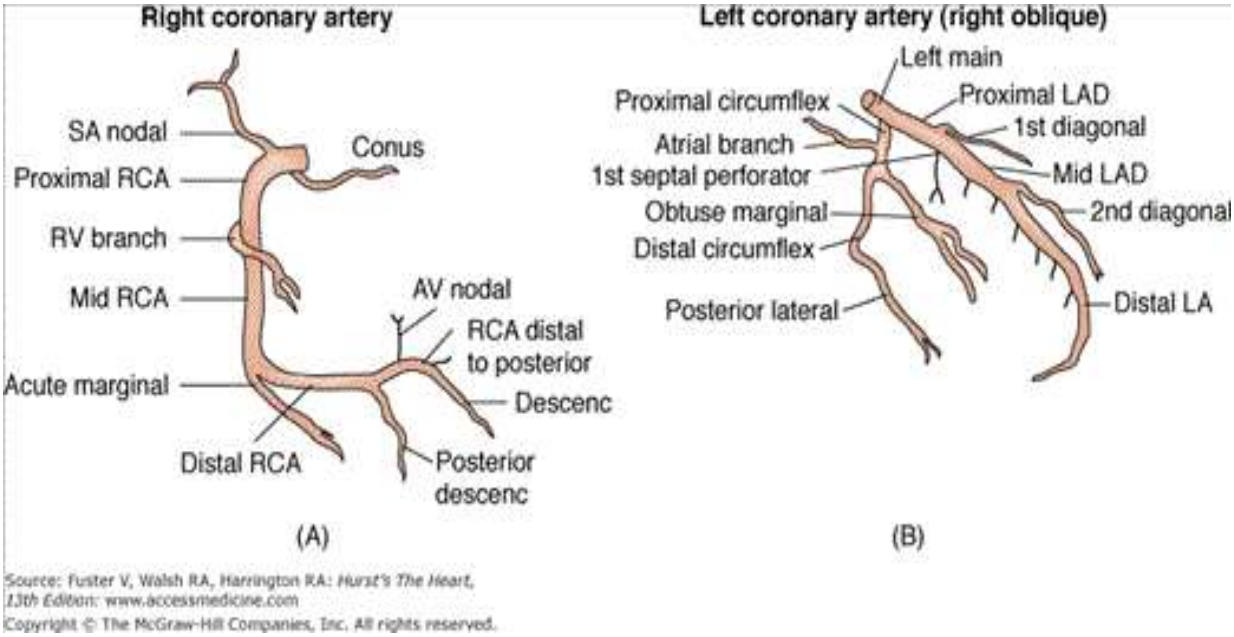
Intent/Clarification: Indicate the number of diseased major native coronary vessel systems: LAD system, Circumflex system, and/or Right system with ≥ 50% narrowing of any vessel preoperatively. **NOTE:** Left main disease (≥ 50%) is counted as TWO vessels (LAD and Circumflex, which may include a Ramus Intermedius). For example, left main and RCA would count as three vessel disease.

A patient may never have more than three vessel disease. Once a coronary artery is found to be diseased, for the purposes of the STS, the vessel is considered diseased for the remainder of the patient's life and all subsequent reoperations regardless of previous interventions.

The number of diseased vessels may not necessarily match the number of bypass grafts performed.

If bypass is performed for an anomalous, kinked or damaged vessel, or myocardial bridging this vessel is counted as one diseased or abnormal vessel.

There are three (3) major coronary systems; Left Anterior Descending (LAD), Circumflex and Right Coronary System (RCA). Each system has "branches" that are considered part of their corresponding system. Vessel stenosis or narrowing is measured in percentages (%), most often expressed as a range of "stenosis".

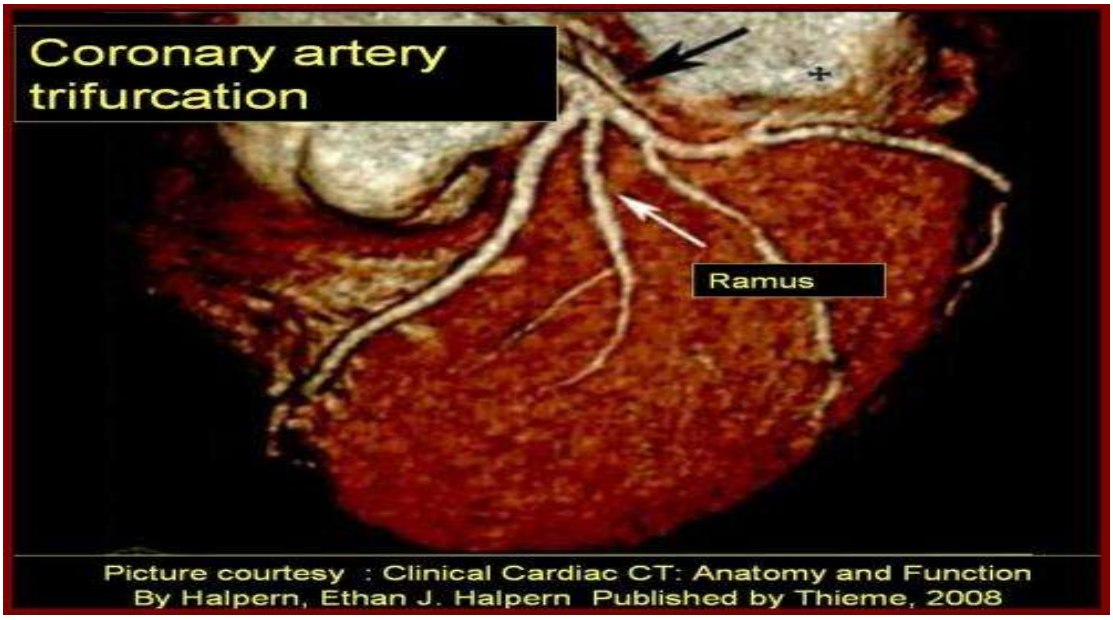


The Ramus Intermedius is a vessel that can function as part of the LAD system or as part of the Circumflex system depending on its course. If the Ramus is part of the LAD system and functions much like a diagonal, code 1 vessel disease. If the Ramus is part of the Circumflex system and functions much like an obtuse marginal AND the patient has LAD

disease, code 2 vessel disease.

If there is ONLY ramus disease, the Ramus should count as a single vessel disease.

If there is any confusion about the distribution of the Ramus as it relates to the LAD or Circumflex coronary artery, consult with your surgeon.

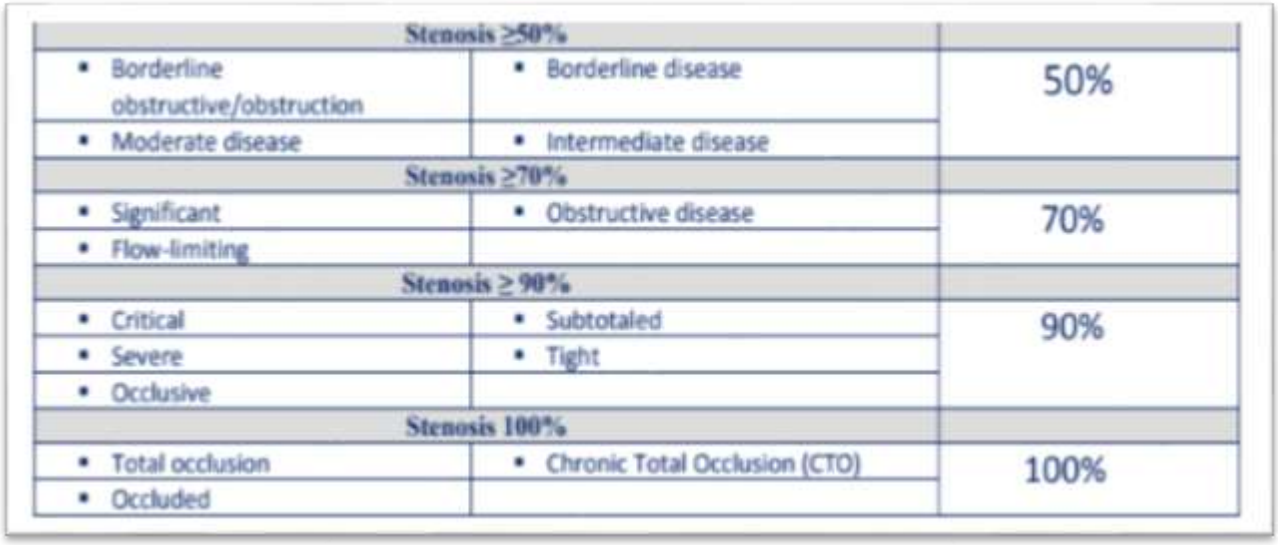


General Information Coronary Artery Stenosis

For cath reports that have a descriptive term such as normal documented in the impression / conclusion / summary and the detail portion of the report says 70%, use the numerical values first and capture as 70%. Use descriptive terms when you have no numerical values.

The following descriptive terms and associated percentages can be used to quantify the % stenosis in any coronary artery.

Please refer to the General Statement regarding time frame of hemodynamic results.



Stenosis ≥50%		
• Borderline obstructive/obstruction	• Borderline disease	50%
• Moderate disease	• Intermediate disease	
Stenosis ≥70%		
• Significant	• Obstructive disease	70%
• Flow-limiting		
Stenosis ≥ 90%		
• Critical	• Subtotaled	90%
• Severe	• Tight	
• Occlusive		
Stenosis 100%		
• Total occlusion	• Chronic Total Occlusion (CTO)	100%
• Occluded		

In instances where multiple lesions are present, capture the highest percent stenosis noted in that vessel. When ranges are reported, such as 45- 50% for stenosis, report as the highest percent in range, in this case 50%.

Stenosis at the ostia of the LAD and circumflex is not considered left main disease for the purpose of Society of Thoracic Surgeons (STS). Stenosis needs to be in the left main artery.

If the cath report states 40% disease, but the Intravascular Ultrasound (IVUS) shows 70%, code 70%.

Capture atretic vessels as 100%.

Coronary dissections without documented stenosis in cath report will be coded as 100%.

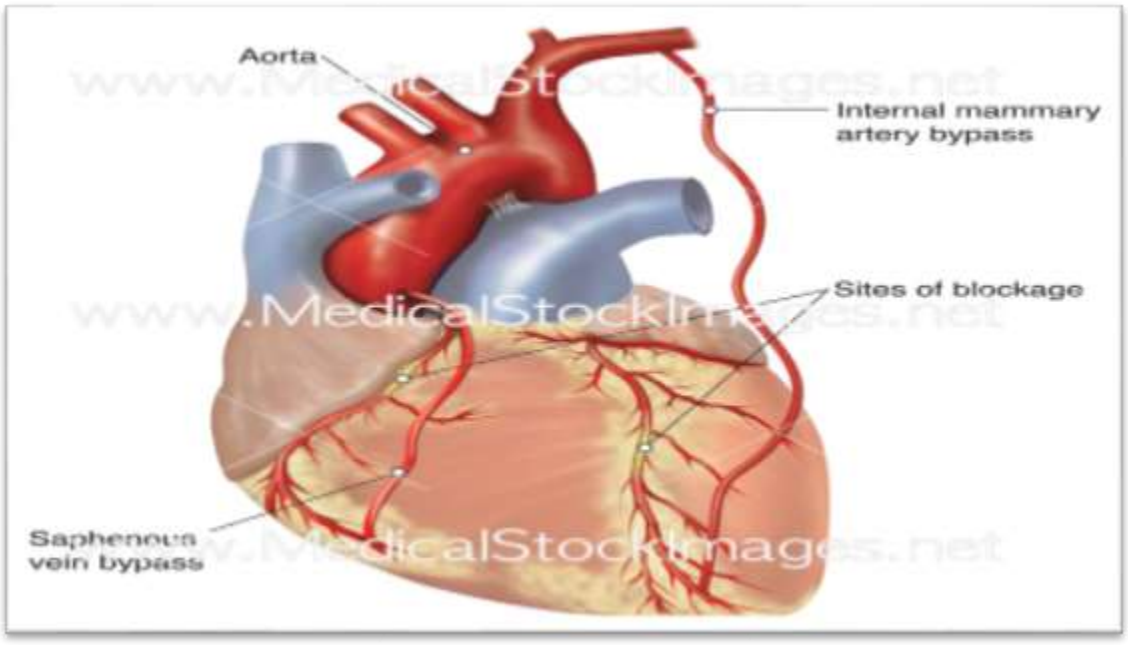
Update Oct 2020 – see below ~~Update September 2020 – Coding of Native Vessel Stenosis in Patients who have had prior CAB Surgery. If all grafts are patent bypassing stenosis in the native vessels then capture RCA, LAD, CX, LM distribution 50% or > as NO. For example, patient had prior CAB x 3 most recent Cath shows 70% stenosis in native LM, 90% stenosis in native LAD, 80% stenosis in native CX, and 95% stenosis in native RCA. Bypass grafts to mid LAD, OM1, and right PDA are patent, code the LM, LAD, CX, and RCA distribution as NO to stenosis 50% or >.~~

Update Oct 2020 – Coding of Native Vessel Stenosis in Patients who have had prior CAB Surgery. If all grafts are patent bypassing stenosis in the native vessels then capture RCA, LAD, CX, LM distribution 50% or > as NO. The goal is to capture new disease of the vessel supplying blood to the myocardium. We are specifically looking for stenosis of vessels that are not bypassed, or stenosis in the bypass graft, or stenosis in a native artery with a graft that may be obstructing flow to the myocardium. See examples below:

- **Patient had prior CAB x 3 most recent Cath shows 90% stenosis in native mid-Left Anterior Descending (mLAD), 80% stenosis in native Circumflex (CM), and 95% stenosis in native distal RCA. The Posterior Descending**

Artery (PDA) originate from the RCA. Bypass grafts to mLAD, OM1, and right PDA are patent and the Provider documents that there is no obstructive disease and no bypass grafts are performed, code the LAD, CX, and RCA distribution as NO to stenosis 50% or greater.

- **Patient had prior CAB x 2 most recent Cath shows 90% stenosis in native Mid LAD, 80% stenosis in native OM 1 and 95% stenosis in native distal RCA. Bypass grafts to mid LAD and right PDA are patent and the Provider is planning on performing a bypass of the native OM1, code the LAD and RCA distribution as NO to stenosis 50% or > and the CX distribution as > 70%.**



Update September 2020 For NA choice – Use the NA choice in situations where the patient does not anatomically have the vessel such as no Ramus and also in situations where the vessel or any part of the vessel distribution has not been addressed in the medical record. For example, there is no mention of the RCA in the cath report or any of the other documentation in the medical record, code the RCA distribution 50% or > as NA.

SEQ. #: 1174
Long Name: Left Main Stenosis >= 50% Known
Short Name: StenLeftMain
Definition Indicate if main stenosis greater or equal to 50% is known.

Intent/Clarification:

- Yes
- No
- N/A

Stenosis at the ostia of the LAD and circumflex is not considered left main disease for the purpose of Society of Thoracic Surgeons (STS). **Stenosis needs to be in the left main artery.**

SEQ. #: 1176
Long Name: Left Main Stenosis Location Known
Short Name: StenLeftMainLctnKn
Definition: Indicate whether the location of the stenosis within a native artery is known.

Intent/Clarification:

- Yes
- No

SEQ. #: 1177
Long Name: Left Main Stenosis Location
Short Name: StenLeftMainLctn
Definition - If Left Main stenosis is >= 50%, identify if the stenosis is within a native artery stenosis, stenotic graft, stenotic stent. If more than one is applicable, then choose all that apply for vessels with equal to or greater than 50% stenosis.

Intent/Clarification:

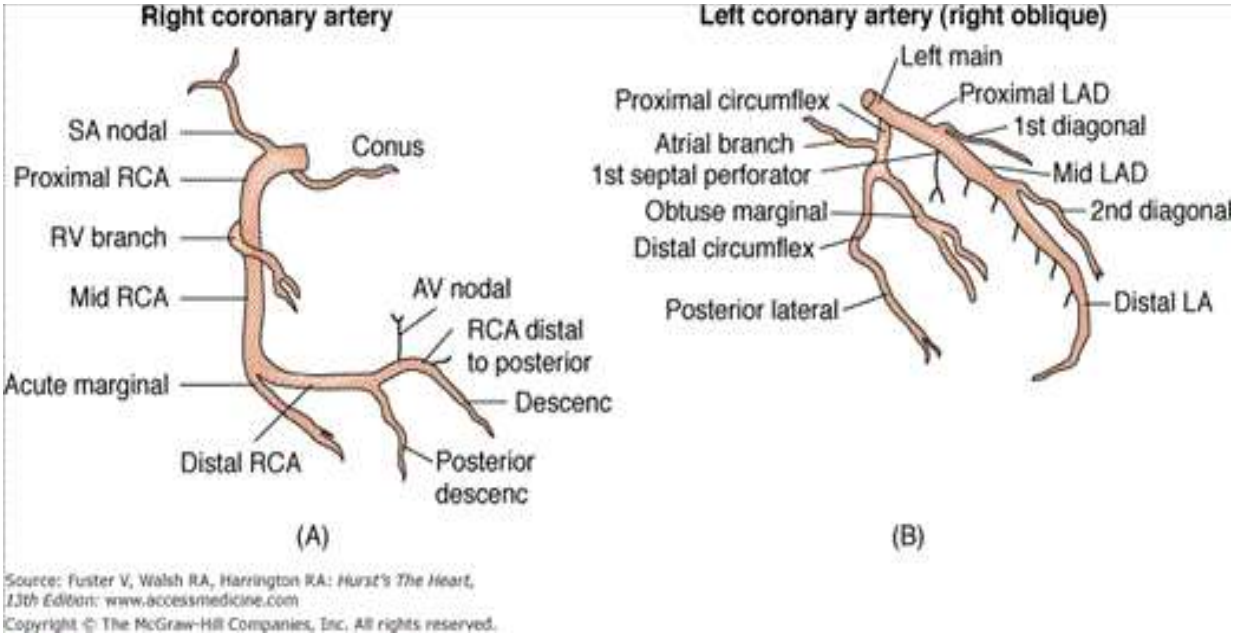
- Native Artery Stenosis
- Stenotic Graft
- Stenotic Stent

Note for stenotic stents in grafts, capture both stenotic graft and stenotic stent.

SEQ. #: 1178
Long Name: LAD Distribution Stenosis >=50% Known
Short Name: LADDistSten
Definition- Indicate if the LAD distribution has equal to or greater than 50% stenosis

Intent/Clarification: The LAD distribution includes the LAD, Septal Perforator and Diagonal branches.

- Yes
- No
- N/A



SEQ.#: 1179
Long Name: LAD Distribution Stenosis Percentage
Short Name: LADDistStenPercent
Definition - Indicate the patient's LAD distribution stenosis percentage range.

Intent/Clarification:

- 50 - 69% stenosis
- >=70% stenosis

SEQ.#: # 1180
Long Name: LAD distribution stenosis – current revascularization – Location Known
Short Name: LADDistStenCurRevLocK
Definition: Indicate whether the location of the current LAD revascularization is known
Intent/Clarification:

- Yes
- No

SEQ.#: # 1181
Long Name: LAD distribution stenosis – current revascularization
Short Name: LADDistStenCurRev
Definition: If LAD distribution stenosis is >= 50%, identify if the stenosis is within a native artery stenosis, stenotic graft, stenotic stent. If more than one is applicable, then choose all that apply for vessels with equal to or greater than 50% stenosis.

Intent/Clarification:

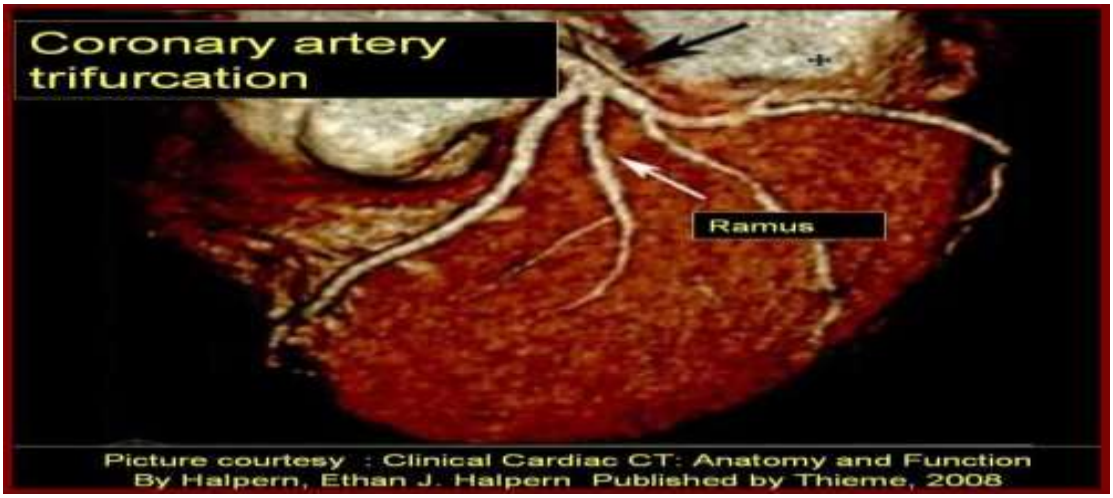
- Native Artery Stenosis
- Stenotic Graft
- Stenotic Stent

Note for stenotic stents in grafts, capture both stenotic graft and stenotic stent.

SEQ. #: 1182
Long Name: Ramus stenosis >= 50% Known
Short Name: RamusSten
Definition. Indicate if the Ramus has equal to or greater than 50% stenosis.

Intent/Clarification: The ramus intermedius is a variant coronary artery resulting from trifurcation of the left main coronary artery. It is present in ~20% (range 15-30%) 2-3 of the population. It can have a course like the obtuse marginal branches of the left circumflex artery or the diagonal branches of the LAD system.

- Yes
- No
- N/A



SEQ.#: 1183
Long Name: Ramus Stenosis Percentage
Short Name: RamusStenPercent
Definition: Indicate the patient's Ramus stenosis percentage range.

Intent/Clarification:

- 50 - 69% stenosis
- >=70% stenosis

SEQ.#: # 1184
Long Name: Ramus stenosis – current revascularization – Location Known
Short Name: RamusStenCurRevLocK
Definition: Indicate whether the location of the current Ramus revascularization is known.

Intent/Clarification:

- Yes
- No

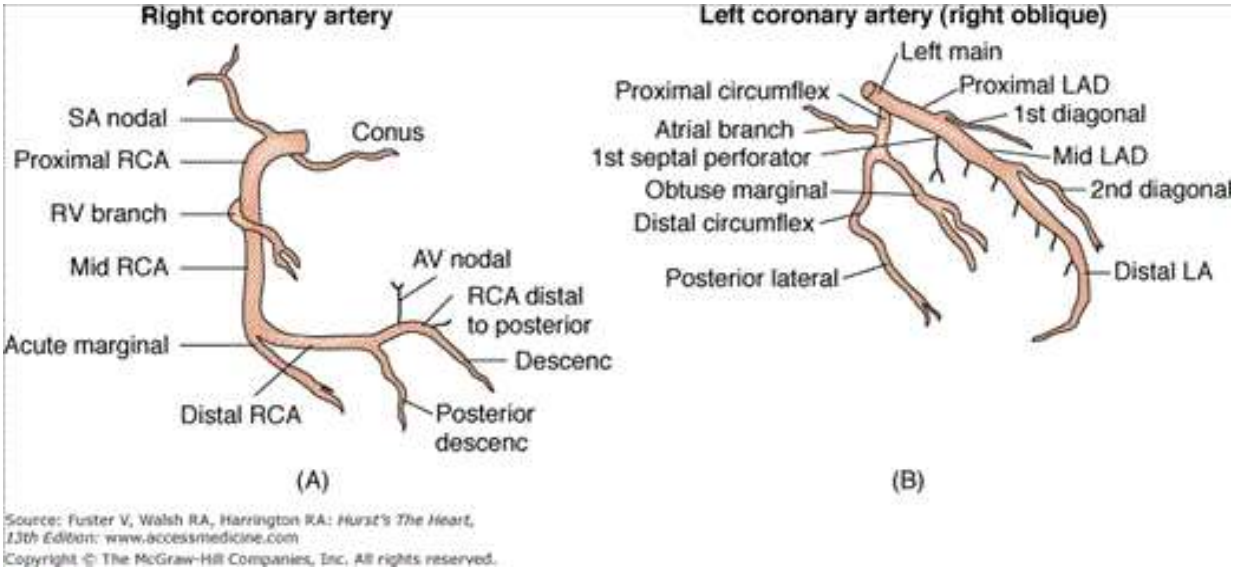
SEQ.#: 1185
Long Name: Ramus Stenosis – current revascularization
Short Name: RamusStenCurRev
Definition: If Ramus stenosis is >= 50%, identify if the stenosis is within a native artery stenosis, stenotic graft, stenotic stent. If more than one is applicable, then choose all that apply for vessels with equal to or greater than 50% stenosis.

Intent/Clarification:
- Native Artery Stenosis
- Stenotic Graft
- Stenotic Stent

Note for stenotic stents in grafts, capture both stenotic graft and stenotic stent.

SEQ. #: 1186
Long Name: Circumflex distribution stenosis >= 50% Known
Short Name: CircDistSten
Definition. Indicate if the Circumflex distribution has equal to or greater than 50% stenosis.

Intent/Clarification: The Circumflex distribution includes the Circumflex (CX), Obtuse Marginal (OM or OB), Circumflex AV Groove, and Posterior Lateral branches (LPL). The left Posterior Descending Artery (LPDA) arises from the left circumflex artery in left dominant persons.
- Yes
- No
- N/A



SEQ. #: 1187
Long Name: Circumflex Distribution Stenosis Percentage
Short Name: CircDistStenPercent

Definition - Indicate the patient's Circumflex distribution stenosis percentage range.

Intent/Clarification:

- 50 - 69% stenosis
- >=70% stenosis

SEQ.#: # 1188
Long Name: Circumflex distribution stenosis - current revascularization - Location Known
Short Name: CircDistStenCurRevLocK
Definition: Indicate whether the location of the current Circumflex revascularization is known.

Intent/Clarification:

- Yes
- No

SEQ.#: 1189
Long Name: Circumflex distribution stenosis – current revascularization
Short Name: CircDistStenCurRev
Definition - If Circumflex distribution stenosis is >= 50%, identify if the stenosis is within a native artery stenosis, stenotic graft, stenotic stent. If more than one is applicable, then choose all that apply for vessels with equal to or greater than 50% stenosis.

Intent/Clarification:

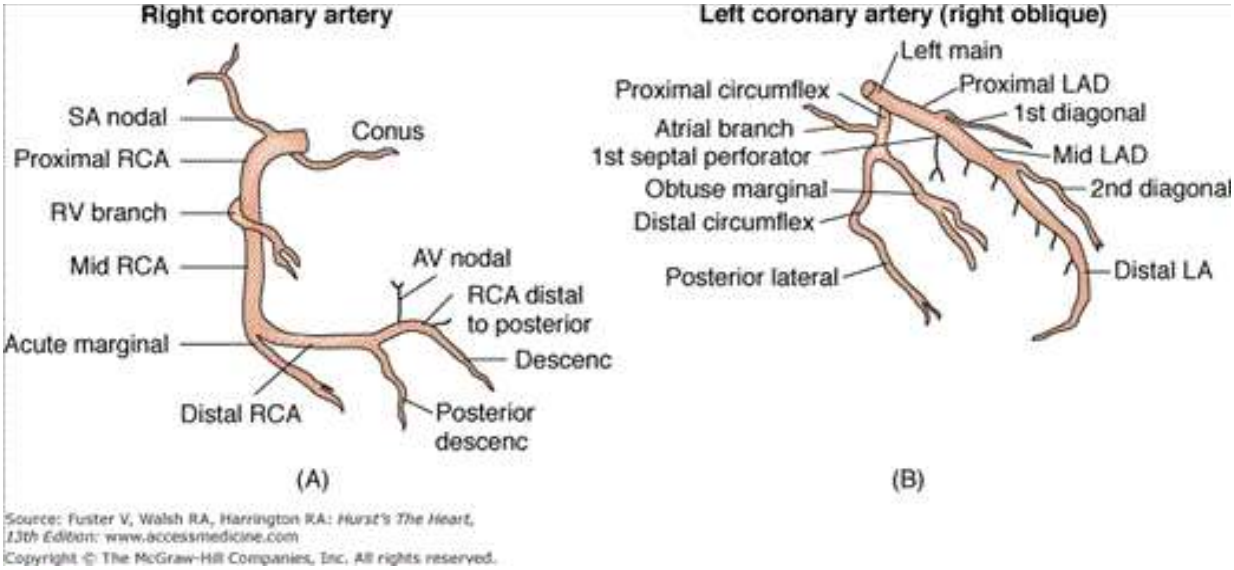
- Native Artery Stenosis
- Stenotic Graft
- Stenotic Stent

Note for stenotic stents in grafts, capture both stenotic graft and stenotic stent.

SEQ. #: 1190
Long Name: RCA distribution stenosis >= 50% Known
Short Name: RCADistSten
Definition: Indicate if the RCA distribution has equal to or greater than 50% stenosis.

Intent/Clarification:
The RCA distribution includes the RCA, Acute Marginal, Conus, RV, Atrioventricular (RPAV) and Posterior Lateral branches (RPL). The right Posterior Descending Artery (RPDA) arises from the RCA artery in right dominant persons.

- Yes
- No
- N/A



SEQ.#: 1191
Long Name: RCA Distribution Stenosis Percentage
Short Name: RCADistStenPercent
Definition - Indicate the patient's Right Coronary Artery (RCA) distribution stenosis percentage range.

Intent/Clarification:

- 50 - 69% stenosis
- >=70% stenosis

SEQ.#: # 1192
Long Name: RCA distribution stenosis - current revascularization - Location Known
Short Name: RCADistStenCurRevLocK
Definition: Indicate whether the location of the current RCA revascularization is known.

Intent/Clarification:

- Yes
- No

SEQ.#: 1193
Long Name: RCA distribution stenosis – current revascularization
Short Name: RCADistStenCurRev
Definition - If RCA distribution stenosis is >= 50%, identify if the stenosis is within a native artery stenosis, stenotic graft, stenotic stent. If more than one is applicable, then choose all that apply for vessels with equal to or greater than 50% stenosis.

Intent/Clarification:

- Native Artery Stenosis
- Stenotic Graft
- Stenotic Stent

Note for stenotic stents in grafts, capture both stenotic graft and stenotic stent.

General Information ECHO / Hemodynamics

General Concepts for Ejection Fraction (EF)

If a percentage range is reported, report a whole number using the “mean”. For example, a range of 55-60 is coded as 58%.

If you have a 3D mode, it will take precedence over the 2D or M mode. If you have a 2D mode and M mode, the 2D mode will take precedence over the M mode.

If there are multiple values for the EF within the echo closest to surgery such as Under the Left Ventricle the EF is 35% and Under Impression LVEF 35-40%, use the value on the final impression / conclusion / summary from the reading physician.

If multiple methods of measurement of EF occur within in the same final impression / conclusion / summary on the echo report closest to surgery, use the following: The priority source for EF is as follows:

- 3D calculated EFs
- Simpsons or biplane calculated EF
- 2D calculated EF
- Visual EF

https://www.asecho.org/wp-content/uploads/2015/01/ChamberQuantification2015.pdf

For echo reports that have a descriptive term such as normal documented in the impression / conclusion / summary for EF and the measurement portion of the report says 60-70% by visual estimate, use the numerical values first and capture as 65%. Use descriptive terms when you have no numerical values.

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

If the EF closest to surgery is on a Nuclear stress test with a post-stress and rest EF documented, use the rest EF.

General Concepts Valve Disease and Regurgitation

If the valve was not visualized on the pre-op echo but was visualized on the intra-op pre-incision echo then you may use the intra-op pre-incision echo for the value of that valve only, not for all the valves if they were visualized on the pre-op echo.

If valve regurgitation is dictated from echocardiogram as "NO SIGNIFICANT REGURGITATION", code none.

If the Echo indicates that the native valve has physiological insufficiency, code as No insufficiency.

For echo's that provide insufficiency in terms of +1, +2, +3, and +4, you cannot assume that +1 equals trace etc... Please work with your echo dept to develop a protocol that clearly defines what the scoring system equals in terms of descriptive terminology. Have this protocol available in the event of an audit.

In a situation where the only documentation that you have is that the valve is 'structurally normal' (there is no documentation of stenosis or insufficiency). Code this as No to disease and No to regurgitation. This documentation implies that the valve is normal without disease or regurgitation.

If you do not have any documentation of valve insufficiency, then code insufficiency as Not Documented.

The valve should be coded as being diseased if there is mild, moderate or severe insufficiency.

For prior Valve repairs and replacements, "once diseased – always diseased" does not apply to valves. The valve is not considered diseased unless there is disease present on the repaired or prosthetic valve.

Update August 2020 - If there are multiple values for the valve regurgitation within the same echo such as Under the Mitral Value is says moderate regurgitation and Under Impression is states mild regurgitation, use the value on the final impression / conclusion / summary from the reading physician.

Update September 2020 - For pre-op valve regurgitation and stenosis Parent fields (Seq 1585,1600,1679,1690,1774,1776,1812,1822) the answers are Yes and No. If you have no documentation of any regurgitation or stenosis then code NO. Do not open up the child fields and code not documented.

General Concepts For Hemodynamic/Cath/ECHO Values and Measurements / Dimensions / Valve Area

Hemodynamic/Cath/ECHO values that are recorded as greater than or less than a value, code the value just below or above the reported value. For example, if echo reports a RVSP of < 35, code as 34, in addition if it is documented as > 35, then code 36.

SEQ. #: 1540
Long Name: Hemo Data-EF Done
Short Name: HDEFD
Definition: Indicate whether the Ejection Fraction was measured prior to surgery. See TM for timeframe and source document priority.

Intent/Clarification: Some patients may not have had an LV Gram performed during cardiac catheterization due to existing clinical conditions. Ejection fraction (EF) and hemodynamic pressures may be obtained from other sources other than coronary angiogram, such as echo, or MUGA.

Because anesthesia can alter the values to be collected, do not collect data from intra-operative transesophageal echo (TEE) after the induction of anesthesia, unless you have no other source to collect the information.

Note: If the patient has an echo and a Cath done on the same day and you are not able to determine which study was performed closest to surgery, use the EF from the LHC.

SEQ. #: 1545
Long Name: Hemo Data-EF
Short Name: HDEF
Definition: Indicate the percentage of the blood emptied from the left ventricle at the end of the contraction. See TM for time frame and source document priority.

Intent/Clarification: Ejection fraction (EF) indicates the efficiency of the left ventricle (ability to pump blood sufficiently to the rest of the body). It compares the amount of blood in the left ventricle at the end of systole (when the ventricle is fuller) to the end of diastole (after the ventricle contracted and should be less full). Issues effecting the left ventricles pumping ability include preload (the amount of blood deposited into the ventricle prior to diastole), afterload (amount of pressure the ventricle has to pump against typically high as a result of elevated systemic venous pressure), ventricular hypertrophy (the enlargement of the ventricle which results in stretching of the ventricle causing decreased contractility and is a usually a result of congestive heart failure), and valvular insufficiency. Ejection fraction is typically reported in a percentage (1-99%) or described with words.

Please note a reported value, for example, a range of 55-60 is coded as 58%.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1555
Long Name: Hemo Data-Dimensions Available
Short Name: DimAvail
Definition: Indicate whether intracardiac dimensions are available prior to surgery. See TM for time-frame and source document priority.

Intent/Clarification: Unit of measurement is mm (if measurement in cm, multiply by 10 to convert to mm).

Priority Source for Dimensions – If multiple modes of measurement of occur within the report closest to surgery and in the same conclusion/ summary on the report, use the following:

- If you have a 3D mode, it will take precedence over the 2D or M mode. If you have a 2D mode and M mode, the 2D mode will take precedence over the M mode.

Other Ways that LV End Systolic and End Diastolic dimensions may be displayed on echo – refer to your echo department if unclear which measurement is the LVSD or LVDD.

- LVESD and LVEDD
- LVIDs and LVIDd
- LV(S) and LV(D)
- LVSD Plax and LVDD Plax

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1560
Long Name: Hemo Data-LV End Systolic Dimension
Short Name: LVSD
Definition: Indicate LV End -Systolic Dimension in mm.
LV end systolic dimension is the same as left ventricular internal dimension in end systole (LVIDs)

Intent/Clarification: During systole, the left ventricle contracts pumping blood through the body. During diastole, the left ventricle relaxes and fills with blood again. The systolic dimension of the left ventricle demonstrates ventricular emptying and when compared to the end diastolic dimension, left ventricular performance is calculated.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1565
Long Name: Hemo Data-LV End-Diastolic Dimension
Short Name: LVEDD
Definition: Indicate the Left Ventricular End-Diastolic Dimension in mm. LV end diastolic dimension is the same as left ventricular internal dimension in end diastole (LVIDs)

Intent/Clarification: During systole, the ventricles contract pumping blood through the body. During diastole, the ventricles relax and fill with blood again. The end-diastolic dimension of the left ventricle demonstrates ventricular filling and when compared to the end systolic dimension, left ventricular performance is calculated.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1570
Long Name: Hemo-PA Systolic Pressure Measured
Short Name: PASYSMeas
Definition: Indicate whether the PA systolic pressure was measured. See TM for time frame and source document priority.

Intent/Clarification: Elevated pulmonary artery pressures are indicative of pulmonary hypertension, mitral valve disease and other pulmonary/cardiac diseases. Normal systolic pulmonary artery pressure readings are between 15-30 mm of pressure.

If there are no PA pressures recorded or available pre-op from heart cath or echo –one may use PA pressure values from Swan Ganz Catheter inserted for surgery **prior to induction of anesthesia.**

For a PA pressure that is documented as a range value, for example, "30-35 mmHg", capture the highest value in the range.

If PA systolic pressure is not available, it is acceptable to code the peak RV systolic pressure (RVSP). RVSP and PA systolic pressures will be the same if there is no pulmonary valve disease or outflow obstruction. Note a RVSP cannot be obtained if there is no tricuspid regurgitation present.

FAQ August 2020 - For PA Systolic pressure, the instructions specify not to take a value from in intra-op measurement after induction of anesthesia. However, the general statement for the hemodynamics section #3 states that you can obtain values that were not available anywhere else from any intra-op measurement prior to incision time. Which of these instructions are we to follow?
Answer - For SEQ 1570, it is specific that if there are no PA pressures recorded or available pre-op from heart cath or echo, that you can only obtain pre-induction values. Do not use pre-incision values.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1575
Long Name: Hemo-PA Systolic Pressure
Short Name: PASYS
Definition: Capture PA systolic pressure recorded. See TM for time frame and source document priority.

Intent/Clarification: For a PA pressure that is documented as a range value, for example, "30-35 mmHg", capture the highest value in the range.

SEQ. #: 1585
Long Name: Aortic Valve Regurgitation
Short Name: AorticValveRegurg
Definition: Indicate whether there is evidence of Aortic valve insufficiency/regurgitation prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: Regurgitation/insufficiency is incompetence of the aortic valve or any of its valvular apparatus which allows diastolic blood flow to flow back into the left ventricular chamber. This may be a chronic or an acute condition.

- Yes
- No

SEQ. #: 1590
Long Name: Aortic Valve Regurgitation Degree
Short Name: VDInsufA
Definition: Indicate whether there is evidence of Aortic valve insufficiency/regurgitation. See TM for time frame and source document priority.

Intent/Clarification: Indicate the degree of aortic valve insufficiency/regurgitation. Code the **highest** level of valve dysfunction for example mild – moderate will be coded as moderate

- Trivial/Trace
- Mild
- Moderate
- Severe
- Not documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1600
Long Name: VD-Stenosis-Aortic
Short Name: VDStenA
Definition: Indicate whether Aortic Stenosis is present

Intent/Clarification: Indicate whether there is evidence of Aortic valve stenosis prior to surgery. For documented trace or minimal stenosis, code NO to stenosis. See TM for time frame and source document priority. Sclerosis does **not** mean stenosis.

The aortic valve controls the direction of blood flow from the left ventricle to the aorta. When in good working order, the aortic valve does not impede the flow of blood between these two spaces. Under some circumstances, the aortic valve becomes narrower than normal, impeding the flow of blood. This is known as aortic valve stenosis or aortic stenosis, often abbreviated as A.S.

Aortic valve stenosis may be caused by aging (leaflets become calcified, thick and stiff), birth defects (congenital bicuspid (2) leaflets) or other disease processes like rheumatic fever.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1601
Long Name: Aortic Valve Stenosis Degree
Short Name: AVStenosis
Definition: Indicate the degree of aortic valve stenosis prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: AS is described as mild, moderate or severe. Capture the degree of aortic valve stenosis present, even if the patient is not scheduled for valve replacement. Use Provider documentation of severity. Code the highest severity documented. For example, if AS is documented as mild-moderate, code moderate. If not documented, then code not documented

- Mild
- Moderate
- Severe - Update September 2020 Critical stenosis can be coded as severe.
- Not Documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1605
Long Name: VD-Aortic Hemodynamic Data Available
Short Name: AoHemoDatAvail
Definition: Indicate whether aortic valve hemodynamic measurements are available prior to surgery. See TM for time-frame and source document priority.

Intent/Clarification:
Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1610
Long Name: VD-Aortic Valve Area
Short Name: VDAoVA
Definition: Indicate the aortic valve area (in cm squared). See TM for time frame and source document priority.

Intent/Clarification: The normal adult aortic valve opening is 3.0-4.0 (cm^2). Aortic stenosis becomes hemodynamically significant when the area decreases to less than 2(cm^2), as the systolic flow is impeded across the valve.

If there are multiple AVA's on the study closest to surgery, if available use the Aortic valve area calculated using the **velocity time integral (VTI)** as priority source for coding.

Other Ways that AV area may be displayed on echo – refer to your echo department if unclear which measurement is the AV area.

- AVA
- AV area
- AoV
- AoV cm2

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1615
Long Name: VD-Aortic Gradient-Mean
Short Name: VDGradA
Definition: Indicate the MEAN gradient (in mmHg) across the aortic valve. See TM for time frame and source document priority.

Intent/Clarification: When the aortic valve becomes stenotic, it causes a pressure gradient between the left ventricle (LV) and the aorta. The more constricted the valve, the higher the gradient between the LV and the aorta. In individuals with AS, the left ventricle (LV) has to work harder to overcome the increased afterload caused by the stenotic aortic valve and eject blood out of the LV. The more severe the aortic stenosis, the higher the gradient is between the left ventricular systolic pressures and the aortic systolic pressures.

Other Ways that AV mean may be displayed on echo – refer to your echo department if unclear which measurement is the AV mean.

- Ao mean PG
- AV mPG
- AV mnPG

Please refer to the General Statement regarding time frame of hemodynamic results.

FAQ Oct 2020 – If the conclusion of the ECHO provides values for mean gradient and peak velocity both under stress and at rest, which values go into the registry? **Answer** - Code the REST values in this scenario.

SEQ. #: 1616

Long Name: VD - Aortic Jet Velocity (Vmax)
Short Name: VDVMax
Definition: Indicate the maximum aortic jet velocity in m/s. See TM for time frame and source document priority.

Intent/Clarification: The antegrade systolic velocity across the narrowed aortic valve, or aortic jet velocity, is measured using continuous-wave (CW) Doppler (CWD) ultrasound. Velocity increases as stenosis severity increases. DM should be able to enter the entire AV velocity (for example 4.73) – notify your vendor if you are unable to enter the entire AV velocity measurement to rectify this issue.

Measurement is in m/s. If it is reported in cm/s divide by 100 to obtain m/s.

Other Ways that Aortic Jet Velocity (Vmax) may be displayed on echo – refer to your echo department if unclear which measurement is the Aortic Jet Velocity (Vmax).

- AV Peak Velocity
- Ao V2 Peak
- AV Peak Vel

Please refer to the General Statement regarding time frame of hemodynamic results.

FAQ Oct 2020 - If the conclusion of the ECHO provides values for mean gradient and peak velocity both under stress and at rest, which values go into the registry? **Answer** - Code the REST values in this scenario.

SEQ. #: 1617
Long Name: VD-Aortic
Short Name: VDAort
Definition: Indicate whether Aortic Valve disease is present.

Intent/Clarification: The valve should be coded as being diseased if there is mild, moderate or severe insufficiency or aortic stenosis.

- Yes
- No

SEQ. #: 1646
Long Name: VD-Aortic Valve Disease Primary Etiology
Short Name: VDAoPrimEt
Definition: Indicate the primary etiology of aortic valve disease.

Intent/Clarification: There is no hierarchy, choose the primary etiology documented in the medical record. Primary etiology may also be identified at the time of the surgical procedure.

Functional bicuspid disease should be captured as Degenerative - Calcified etiology.

Note: For patients that have a documented etiology that is not on the selection list, code not documented as there is no option to code not listed or other. For example, the patient had a thrombotic mass on the aortic valve from an antiphospholipid syndrome.

SEQ. #: 1679
Long Name: Mitral Valve Regurgitation
Short Name: MVRegurg
Definition Indicate whether there is evidence of Mitral valve insufficiency/regurgitation prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: Mitral regurgitation/insufficiency may be an acute or chronic condition manifesting itself as increased left heart filling pressures which increase the left ventricular stroke volume (amount of blood ejected from the Left Vent. with each heartbeat). Over time, and depending upon the severity, MR can result in pulmonary edema and systemic volume overload. In chronic MR, Left Ventricular Hypertrophy may result. Mitral prolapse and rheumatic fever are the most common cause of MR.

- Yes
- No

SEQ. #: 1680
Long Name: VD-Regurgitation-Mitral
Short Name: VDInsufM
Definition: Indicate whether there is evidence of Mitral valve insufficiency/regurgitation. See TM for time frame and source document priority.

Intent/Clarification: Indicate the degree of mitral valve insufficiency/regurgitation. Code the **highest** level of valve dysfunction for example mild – moderate will be coded as moderate

- Trivial/Trace
- Mild
- Moderate
- Severe
- Not documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1690
Long Name: VD-Stenosis-Mitral
Short Name: VDStenM
Definition: Indicate whether Mitral Stenosis is present

Intent/Clarification: Indicate whether there is evidence of Mitral valve stenosis prior to surgery. For trace or minimal stenosis, code NO to stenosis. See TM for time frame and source document priority. Sclerosis does **not** mean stenosis.

Stenosis is the narrowing of the valve opening. Valve stenosis is most often caused by rheumatic fever, causing the leaflets to become rigid, stiff, and thick and/or fused reducing the amount of blood able to be ejected from the left atria into the left ventricle. Mitral stenosis (MS) causes blood to back up, dilate the left atria and create buildup of fluid in the lungs (congestive heart failure). Atrial fibrillation is a common arrhythmia in patients with MS.
Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1691
Long Name: Mitral Valve Stenosis Degree
Short Name: MVStenDeg
Definition: Indicate the degree of mitral valve stenosis prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: MS is described as mild, moderate or severe. Capture the degree of mitral valve stenosis present, even if the patient is not scheduled for valve replacement. Use Provider documentation of severity. Code the highest severity documented. For example, if MS is documented as mild-moderate, code moderate. If not documented, then code not documented

- Mild
- Moderate
- Severe - **Update September 2020 Critical stenosis can be coded as severe**
- Not Documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1695
Long Name: VD-Mitral Hemodynamic Data Available
Short Name: MiHemoDatAvail
Definition: Indicate whether mitral valve hemodynamic measurements are available prior to surgery. See TM for time-frame and source document priority.

Intent/Clarification:
Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1700
Long Name: Mitral - Valve Area

Short Name: VDMVA
Definition: Indicate the Mitral Valve Area (in cm squared). See TM for time frame and source document priority.

Intent/Clarification: The normal area of the mitral valve orifice is about 4 to 6 (cm2). Under normal conditions, a normal mitral valve will not impede the flow of blood from the left atrium to the left ventricle during (ventricular) diastole, and the pressures in the left atrium and the left ventricle during ventricular diastole will be equal. When the mitral valve area goes below 2.0 (cm2), the valve causes an impediment to the flow of blood into the left ventricle, creating a pressure gradient across the mitral valve.

If there are multiple MVA's on the study closest to surgery, use the mitral valve area by planimetry if it is performed as the priority source for coding. If this is not documented, then use the MV VTI, followed by the MVA using P1/2t (PHT) as priority source for coding.

Other Ways that MV area may be displayed on echo – refer to your echo department if unclear which measurement is the MV area.

- MVA
- MV area

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1705
Long Name: Mitral - Mean Gradient
Short Name: VDGradM
Definition: Indicate the MEAN gradient (in mmHg) across the mitral valve. See TM for time frame and source document priority.

Intent/Clarification: Mitral valve stenosis results from a narrowing of the mitral valve orifice when the valve is open. The high resistance across the stenotic mitral valve causes blood to back up into the left atrium thereby increasing LA pressure. This results in the left atrial (LA) pressure being much greater than left ventricular (LV) pressure during diastolic filling.

The gradient is highest during early diastole when the flow across the valve is highest. Normally, the pressure gradient across the valve is exceedingly small (a few mmHg); however, the pressure gradient can become quite high during severe stenosis (10-30 mmHg).

Other Ways that MV mean may be displayed on echo – refer to your echo department if unclear which measurement is the MV mean.

- MV mean PG
- MV mPG
- MV mnPG

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1710
Long Name: VD-Mitral
Short Name: VDMit
Definition: Indicate whether Mitral valve disease is present.

Intent/Clarification: The mitral valve is made up of the annulus, anterior and posterior leaflets, and chordae, which attach the leaflets to their respective papillary muscles. A normally functioning valve allows blood to flow unimpeded from the left atrium to the left ventricle during diastole and prevents regurgitation during systole. Normal mitral valve function is dependent not only on the integrity of the underlying valvular structure, but on that of the adjacent myocardium as well. Mitral valve disease is the most common form of heart valve disease in the United States, affecting 5 percent of the population and resulting in over 500,000 hospital admissions per year. There are two general forms of mitral valve disease: mitral regurgitation/insufficiency and mitral stenosis.

The valve should be coded as being diseased if there is mild, moderate or severe insufficiency or mitral stenosis.

- Yes
- No

SEQ. #: 1711
Long Name: VD-Mitral Valve Disease
Short Name: VDMitDis
Definition: Indicate whether Mitral valve disease is present.

Intent/Clarification:
Indicate the primary etiology of mitral valve disease. There is no hierarchy, choose the primary etiology documented in the medical record. Primary etiology may also be identified at the time of the surgical procedure.

- Carpentier Class I - Normal Leaflet Mobility
- Carpentier Class II - Increased Leaflet Mobility
- Carpentier Class III A - Restricted Leaflet Mobility (systole and diastole)
- Carpentier Class III B - Restricted Leaflet Mobility (systole only)
- Mixed Lesion (Type II and Type III A)
- Acute Papillary muscle rupture
- Reoperative-Failure of previous MV repair or replacement
- Other / Unknown / Not Available

Carpentier functional classification of mitral valve disease is used to describe the mechanism of valvular dysfunction. This classification is based on the opening and closing motions of the mitral leaflets.

If there is a conflict in documentation, for example the Provider documents the Carpentier Class and documents a lesion that is not included in the description for that Carpentier Class, clarify with Provider.

SEQ. #: 1712
Long Name: VD-Mitral Valve Disease - Carpentier Classification - Class I - Type

Short Name: VDMitDisClsITy
Definition: Indicate type of Carpentier Class I Mitral Valve Disease.

Intent/Clarification: This classification is meant for native valves. Type I –Normal leaflet motion. N1= Type I -Normal leaflet motion.

- Pure Annular Dilatation
- Endocarditis, Native Valve - Clarify the Carpentier Classification with surgeon since endocarditis is in this selection set and the Carpentier Classification Class II selection set.
- Other / Unknown / Not Available

If the echo states “normal leaflet motion”, this be coded as Type I.

SEQ. #: 1713
Long Name: VD-Mitral Valve Disease - Carpentier Classification - Class II - Type
Short Name: VDMitDisClsIITy
Definition: Indicate type of Carpentier Class II Mitral Valve Disease.

Intent/Clarification: This classification is meant for native valves. Type II -Excess Leaflet Motion. Prolapse & Flail = Type II.

- Myomatous degenerative prolapse/flail – Includes chordal elongation and/or rupture with leaflet prolapse.
- Endocarditis - Clarify the Carpentier Classification with surgeon since endocarditis is in this selection set and the Carpentier Classification Class I selection set.
- Other / Unknown / Not Available

SEQ. #: 1714
Long Name: VD-Mitral Valve Disease - Carpentier Classification - Class II - Myomatous
Short Name: VDMitDisClsIIMyo
Definition: If the patient has myxomatous degenerative prolapse/flail, indicate if the anterior, posterior or both leaflets are involved.

Intent/Clarification:

- Posterior Leaflet
- Anterior Leaflet
- Both

SEQ. #: 1715
Long Name: VD-Mitral Valve Disease - Carpentier Classification - Class III A - Type
Short Name: VDMitDisClsIIIATy
Definition: Indicate type of Carpentier Class III A Mitral Valve Disease.

Intent/Clarification: This classification is meant for native valves. Type IIIa -Restricted leaflet motion systolic and diastolic.

- Rheumatic
- Tumor (Carcinoid or Other)

- Radiation Induced Heart Disease
- MAC - Mitral annulus calcification (MAC). Clarify with surgeon since MAC is in this selection set and the Mixed Lesion selection set.
- Congenital - Clarify with surgeon since congenital is in this selection set and the Mixed Lesion selection set.
- Other / Unknown / Not Available

SEQ. #: 1716
Long Name: VD-Mitral Valve Disease - Carpentier Classification - Class III B - Type
Short Name: VDMitDisClsIIIBTy
Definition: Indicate type of Carpentier Class IIIB Mitral Valve Disease.

Intent/Clarification: This classification is meant for native valves. Type IIIb -Restricted leaflet motion systolic.

- Ischemic (acute/chronic)
- Non-ischemic Cardiomyopathy
- HCM - Hypertrophic cardiomyopathy (HOCM)
- Other / Unknown / Not Available

SEQ. #: 1717
Long Name: VD-Mitral Valve Disease – Mixed Lesion - Type
Short Name: VDMitDisMixedTy
Definition: Indicate type of mixed lesion.

Intent/Clarification: This classification is meant for native valves. Mixed Lesion (Type II and Type III A)

- Mixed leaflet lesion (prolapse/flail and restriction)
- Congenital - Clarify with surgeon since congenital is in this selection set and the Carpentier Class III A selection set.
- MAC - Mitral annulus calcification (MAC). Clarify with surgeon since MAC is in this selection set and the Mixed Lesion selection set.
- Other / Unknown / Not Available

SEQ. #: 1774
Long Name: Tricuspid Valve Regurgitation
Short Name: TricuspidVRegurg
Definition Indicate whether there is evidence of Tricuspid valve insufficiency/regurgitation prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: Tricuspid regurgitation/insufficiency creates a backwards flow of blood across the tricuspid valve and causes enlargement of the right atrium and possibly atrial fibrillation. Capture even if patient is not scheduled for valve repair and/or replacement when available.

- Yes
- No

SEQ. #: 1775
Long Name: VD-Tricuspid Regurgitation
Short Name: VDInsufT
Definition: Indicate whether there is evidence of Tricuspid valve insufficiency/regurgitation. See TM for time frame and source document priority.

Intent/Clarification: Indicate the degree of tricuspid valve insufficiency/regurgitation. Code the **highest** level of valve dysfunction for example mild – moderate will be coded as moderate

- Trivial/Trace
- Mild
- Moderate
- Severe
- Not documented

Note: For patients who have had a prior tricuspid valvectomy, code severe insufficiency.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1776
Long Name: VD-Tricuspid Valve Stenosis
Short Name: VDStenT
Definition: Indicate whether Tricuspid Valve Stenosis is present

Intent/Clarification: Indicate whether there is evidence of tricuspid valve stenosis (TS) prior to surgery. For trace or minimal stenosis, code NO to stenosis. See TM for time frame and source document priority. Sclerosis does **not** mean stenosis.

The tricuspid valve is the largest of the four valves. Stenosis, over time, may create an enlarged right atrium, reducing the amount of blood flow into the right ventricle; thereby, reducing cardiac output. Prolonged or chronic tricuspid stenosis may cause systemic vascular congestion, manifested primarily in the liver. Capture even if patient is not scheduled for valve repair or replacement.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1777
Long Name: Tricuspid Valve Stenosis Degree
Short Name: TricuspidValveSten
Definition: Indicate the degree of tricuspid valve stenosis.

Intent/Clarification: TS is described as mild, moderate or severe. Capture the degree of mitral valve stenosis present, even if the patient is not scheduled for valve replacement. Use Provider documentation of severity. Code the highest severity documented. For example, if TS is documented as mild-moderate, code moderate. If not documented, then code not documented

- Mild
- Moderate

- Severe - Update September 2020 Critical stenosis can be coded as severe
- Not Documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1778
Long Name: VD-Tricuspid Valve Disease
Short Name: VDTr
Definition: Indicate whether Tricuspid Valve disease is present.

Intent/Clarification: The valve should be coded as being diseased if there is mild, moderate or severe insufficiency or tricuspid stenosis.

- Yes
- No

SEQ. #: 1779
Long Name: VD-Tricuspid Annular Measurement Available
Short Name: VDTrAnnMeas
Definition: Indicate whether a tricuspid annular diameter measurement is available prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: Tricuspid regurgitation (TR) occurs mainly from tricuspid annular dilation, which can result from left-sided heart failure from myocardial or valvular causes, right ventricular volume and pressure overload, or dilation of cardiac chambers.

- Yes
- No

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1780
Long Name: VD-Tricuspid Annulus Size (Diameter)
Short Name: VDTrAnnSize
Definition: Indicate tricuspid annular diameter in cm. See TM for time frame and source document priority.

Intent/Clarification: Normal values for Tricuspid annular diameter: 2-4 (cm).

SEQ. #: 1811
Long Name: VD-Tricuspid Valve Disease Primary Etiology
Short Name: VDTrPrimEt
Definition: Indicate the primary etiology of tricuspid valve disease.

Intent/Clarification: There is no hierarchy, choose the primary etiology. Primary lesion may be identified at the time of the surgical procedure.

Note: For patients that have a documented etiology that is not on the selection list, code not documented as there is no option to code not listed or other.

SEQ. #: 1812
Long Name: Pulmonic Valve Regurgitation
Short Name: PulmonicValveRegurg
Definition: Indicate whether there is evidence of Pulmonic valve insufficiency/regurgitation prior to surgery. See TM for time frame and source document priority.

Intent/Clarification: Most common cause is from chronic pulmonary hypertension (noted by high PA pressures > 30mm Hg). Incompetent pulmonary leaflets allow blood to flow back into the Right Vent. This may be a chronic or an acute condition.

- Yes
- No

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1820
Long Name: Pulmonic Valve Regurgitation Degree
Short Name: VDInsufP
Definition: Indicate whether there is evidence of Pulmonic valve insufficiency/regurgitation. See TM for time frame and source document priority.

Intent/Clarification: Indicate the degree of pulmonic valve insufficiency/regurgitation. Code the **highest** level of valve dysfunction for example mild – moderate will be coded as moderate

- Trivial/Trace
- Mild
- Moderate
- Severe - Update September 2020 Critical stenosis can be coded as severe
- Not documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1822
Long Name: VD-Pulmonic Valve Stenosis
Short Name: VDStenP
Definition: Indicate whether Pulmonic Stenosis is present

Intent/Clarification: Indicate whether there is evidence of pulmonic valve stenosis prior to surgery. See TM for time frame and source document priority. Sclerosis does **not** mean stenosis.

Pulmonary stenosis (PS) is often due to congenital malformation of the valve. As it restricts blood flow from the right ventricle into the pulmonary artery, patients experience extreme fatigue and palpitations. Severe PS may create a bluish tint to skin and is life threatening.

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1823
Long Name: Pulmonic Valve Stenosis Degree
Short Name: PulmValveSten
Definition: Indicate the degree of pulmonic valve stenosis (PS) prior to surgery. For trace or minimal stenosis, code NO to stenosis. See TM for time frame and source document priority.

Intent/Clarification: PS is described as mild, moderate or severe. Capture the degree of pulmonic valve stenosis present, even if the patient is not scheduled for valve replacement. Use Provider documentation of severity. Code the highest severity documented. For example, if PS is documented as mild-moderate, code moderate. If not documented, then code not documented.

- Mild
- Moderate
- Severe
- Not Documented

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1824
Long Name: VD-Pulmonic Hemodynamic Data Available
Short Name: PuHemoDatAvail
Definition: Indicate whether pulmonary valve gradient is available.

Intent/Clarification: Indicate whether the mean pulmonic valve gradient is available prior to surgery. See TM for timeframe and source document priority

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1825
Long Name: VD-Pulmonic Gradient-Highest Mean
Short Name: VDGradP
Definition: Indicate the mean gradient (in mmHg) across the pulmonic valve. See TM for time frame and source document priority.

Intent/Clarification: Indicate the ~~highest~~ mean gradient (in mmHg) across the pulmonic valve.

Other Ways that PV mean may be displayed on echo – refer to your echo department if unclear which measurement is the PV mean.

- PV mPG
- PV mnPG

Please refer to the General Statement regarding time frame of hemodynamic results.

SEQ. #: 1828
Long Name: VD-Pulmonic Valve Disease
Short Name: VDPulm
Definition: Indicate whether Pulmonic Valve disease is present.

Intent/Clarification: The pulmonary valve is a valve between the heart and the artery that leads to the lungs. If valve regurgitation or insufficiency is present, blood can flow from the artery and back into the heart. Pulmonary stenosis reduces blood flow to the lungs and makes the right ventricle work harder. The condition can cause the right sided heart failure. Pulmonary valve disease mostly occurs as a congenital abnormality, but it can also be caused by conditions such as pulmonary hypertension, infective endocarditis or Marfan syndrome.

The valve should be coded as being diseased if there is mild, moderate or severe insufficiency or pulmonic stenosis.

- Yes
- No

SEQ. #: 1855
Long Name: VD-Pulmonic Valve Disease Etiology
Short Name: VDPuEt
Definition: Indicate the primary etiology of aortic valve disease.

Intent/Clarification: There is no hierarchy, choose the primary etiology documented in the medical record. Primary etiology may also be identified at the time of the surgical procedure. **Update July 2020 – the selection for "Endocarditis" is to be used for Endocarditis of the native valve. There is a separate selction for Endocarditis of a prosthetic valve.**

Operative

SEQ. #: 1955
Long Name: Surgeon
Short Name: Surgeon
Definition: Indicate the name of the surgeon responsible for the patient's care.
This field must have controlled data entry where a user selects the surgeon name from a user list. This will remove variation in spelling, abbreviations and punctuation within the field.

Intent/Clarification: Field must be populated. Missing data or information for a surgeon not on your current contract with the STS will cause your data file submission not to process.

SEQ. #: 1960
Long Name: Surgeon's National Provider Identifier
Short Name: SurgNPI

Definition: Indicate the individual-level National Provider Identifier of the surgeon performing the procedure. For Non-US surgeons a unique identifier will be assigned by STS.

Intent/Clarification: Field must be populated. Missing or inaccurate data will cause your data file submission not to process. It is crucial to enter the correct surgeon identifier since it may impact public reporting and physician quality reporting. This link provides an NPI search –

https://nppes.cms.hhs.gov/#/

SEQ. #: 1965
Long Name: Taxpayer Identification Number
Short Name: TIN
Definition: Indicate the Taxpayer Identification Number for the Taxpayer holder of record for the Surgeon's National Provider Identifier that performed the procedure. This may be an individual TIN or a group TIN depending on billing. This information is vital for MIPS reporting. This field will be blank for Non-US participants

Intent/Clarification: -

SEQ. #: 1966
Long Name: STS Risk Calculator Score Discussed
Short Name: RiskDiscussed
Definition: Indicate whether the STS Risk Calculator score was discussed with the patient/family prior to surgery.

Intent/Clarification: Time frame for the Risk Calculator documentation is within 6 months of surgery. The intent is to indicate if the **STS Risk Calculator score was discussed** with the patient/family prior to surgery. The surgeon should reference the STS Risk score or calculator in his discussion / documentation and /or a copy of it should be in the chart with documentation that it was discussed with the patient/family in order to code YES. STS risk models are available for CABG, AVR, AVR + CABG, MVR, MVR + CABG, MV Repair, MV Repair + CABG and calculated in vendor software or using the STS Risk Calculator. For all other procedures code NA. The Euroscore cannot be used to complete this field. The STS Risk Calculator can be found here.

Use of STS Risk Calculator is the ONLY way to select “YES” to this question. This is a MIPS reported measure.

https://www.sts.org/registries-research-center/sts-national-database/mips-reporting

- Yes - STS risk calculator score was calculated and discussed with the patient/family prior to surgery and documented in the medical record.

- No - STS risk calculator score was available for the scheduled procedure but not discussed with the patient/family prior to surgery or discussion was not documented.

- NA - not applicable (emergent or salvage case, or no risk model available for this procedure)

Do not use Risk Calculator entries for documentation of risk factors in the ACSD.

SEQ. #: 1970
Long Name: Incidence
Short Name: Incidenc
Definition: Indicate if this is the patient's:

- first surgery
- first re-op surgery
- second re-op surgery
- third re-op surgery
- fourth or more re-op surgery
- N/A – not a cardiovascular surgery

Intent/Clarification: Incidence will be defined by the number of times of entry into the space for a specific procedure. Please see this resource for an overview of anatomical spaces.A CABG/AVR/ MVR would be in pericardial space. A root/ascending/arch would be the pericardial space. An open distal arch/descending would be the pleural space. An open thoracoabdominal would involve the pleural and abdominal space. See examples below:

- Previous descending with a current AVR/Root/CAB. This would be first incidence into the pericardial space.
- Previous AVR/Root/hemiarch with a current CAB. This would be first re-op into the pericardial space.
- Previous CAB/AVR with a current open descending. This would be first incidence for pleural space

For the purposes of this field surgery is defined as cardiothoracic surgical procedures performed on the heart, great vessels or major pericardial procedures, with or without cardiopulmonary bypass (CPB). Ascending aortic and arch procedures also qualify. Similarly, catheter-based procedures such as TAVR, TEVAR, mitral-clip, are endovascular procedures and are not classified as prior surgery. Also include lung procedures utilizing CPB or tracheal procedures utilizing CPB. Reoperation increases risk due to presence of scar tissue or adhesions.

Great vessels are vessels that are directly attached to the heart - Superior vena cava; Inferior vena cava; Pulmonary arteries**;** Pulmonary veins; Aorta.

The intent of this field is to capture the incidence of the procedure that the patient is about to go through during the current hospitalization, as compared to those procedures prior to this hospitalization. First operative means the patient has never had any surgical procedure on the heart and/or great vessels. Note: previous surgical intervention increases risk for morbidity and mortality and severity of disease process. Choosing N/A does not automatically exclude the patient from analysis.

Other Examples of Incidence:

- Patient has a history of a CABG, then later a VAD, then a heart transplant.

The patient is now having a CABG on his transplanted heart. Code incidence as third reoperation since the pericardial space has been entered 3 times.

- Patient underwent a percutaneous aortic valvuloplasty at age 12. He now enters the OR for a surgical AVR. Code incidence as first cardiovascular surgery since the first procedure was percutaneously and this will be the first time the pericardial space is entered.

- Prior TAVR case that needs a redo-AVR should be coded as first reoperation.

- Prior TAVR case that needs another cardiac procedure such as a CAB or MVR should be code as incidence as first CV surgery.

- Prior Mitral Clip Procedure that needs an MVR should be coded as the first operation.

- Prior TMVR case that needs a redo-MVR should be coded as first reoperation.

- Prior TMVR case that needs another cardiac procedure such as a CAB or AVR should be code as incidence as first CV surgery.

- **Update September 2020** - Prior thoracic endovascular aneurysm repair that needs another thoracic endovascular aneurysm repair should be coded as first reoperation.

- **Update Oct 2020 - ANY Endovascular explant is counted as a previous incidence. For example, if a patient had a TEVAR in the past and is now having another aorta procedure where a prior endovascular stent or graft is explanted during procedure, code as first re-op.**

- **Update Oct 2020 - Previous Left Mini Thoractomy for MIDCAB that needs Sternotomy AVR, code as first re-op.**

- **Update Oct 2020 - Previous Left Mini Thoractomy for MIDCAB that needs Open** Thoracoabdominal aortic aneurysm **(**TAAA**)** repair **via left Thoracotomy, code as first CV surgery.**

- **Update Oct 2020 - Previous sternotomy CABG that needs Mini Rt thoracotomy Mitral Repair, code as first re-op.**

SEQ. #: 1975
Long Name: Status
Short Name: Status
Definition: Indicate the clinical status of the patient prior to entering the operating room.

Intent/Clarification:

- **Elective**- The patient's cardiac function has been stable in the days or weeks prior to the operation. The procedure could be deferred without increased risk of compromised cardiac outcome.

- **Urgent** - Procedure required during same hospitalization in order to minimize chance of further clinical deterioration. Examples include but are not limited to: Worsening or sudden chest pain, CHF, acute myocardial infarction (AMI), anatomy, IABP, unstable angina (USA) with intravenous (IV) nitroglycerin (NTG) or rest angina. Any of the conditions that require that the patient remain in the hospital until surgery can take place, but the patient is able to wait for surgery until the next available OR schedule time. Delay in the operation may be necessitated by attempts to improve the patient's condition, availability of a spouse or parent for informed consent, availability of blood products, or the availability of results of essential laboratory procedures or tests. For example, if a patient is brought in for an elective cardiac cath and kept in the hospital for surgery, select urgent.

- **Emergent** - Patients requiring emergency operations will have ongoing, refractory (difficult, complicated, and/or unmanageable) unrelenting cardiac compromise, with or without hemodynamic instability, and not responsive to any form of therapy except cardiac surgery. An emergency operation is one in which there should be no delay in providing operative intervention. Patients requiring emergency operations will have ongoing, refractory (difficult, complicated, and/or unmanageable) cardiac compromise, with or without hemodynamic instability, and not responsive to any form of therapy except cardiac surgery. Hemodynamic picture of shock that is being chemically or mechanically supported. (IV inotrope or IABP to maintain cardiac output [CO]. Requires intubation and ventilation for pulmonary edema. The patient is extending an MI and requires immediate surgery. The patient continues to show signs of ongoing ischemia, i.e. EKG changes. Acute native valve dysfunction i.e. as acute papillary muscle rupture or torn leaflet. Prosthetic valve dysfunction is defined as a structural failure with that valve-fractured or torn leaflet, thrombus formation, pannus development which impedes flow through the valve orifice, or valvular dehiscence (coming loose or disconnected at the suture line). Acute dissection secondary to trauma or dissection secondary to progression of disease. Rupture or dissection during cardiac cath; perforation, tamponade following cardiac cath.
    - If a patient presents with a scenario that does not fit into a definite category; it is reasonable to code the reason that most closely matches the patient's presentation.

- **Emergent Salvage** -The patient is undergoing CPR en-route to the OR prior to anesthesia induction or has ongoing ECMO to maintain life. ECMO: ECMO is to be captured as a status of 'Salvage' in sequence 1975 and as 'Resuscitation – Yes' in sequence 935. ECMO is a supportive modality and not a procedural type. The risk of the patient on ECMO is accounted for when 'Status = salvage' and should be left in the intended procedural category.

SEQ. #: 1990
Long Name: Urgent, Emergent or Emergent Salvage Reason
Short Name: UrgEmergRsn
Definition: Choose one reason from the list below that best describes why this operation was considered urgent, emergent, or emergent/salvage.

Intent/Clarification: See list for options. **There is no hierarchy - choose the primary reason the procedure is urgent or emergent.** There may be multiple reasons, choose one that best describes this patient's clinical state. The reason is patient specific and needs to be taken from the surgeon's notes. For example:

- Unstable angina at the time of admission would be coded unstable angina at the time of surgery.

- If a patient has severe aortic and mitral valve stenosis, but also has symptoms such as dyspnea on exertion (DOE), paroxysmal nocturnal dyspnea (PND), congestion on x-ray or pedal edema that has been treated as CHF, code "CHF" as the most appropriate choice.

- Valve dysfunction is defined as a structural failure with that valve. For prosthetic valves – fractured leaflet, thrombus formation, pannus development which impedes flow through the valve orifice, or valvular dehiscence (coming loose or disconnected at the suture line). Native valve dysfunction includes papillary rupture or torn leaflet. Rupture or dissection during cardiac cath; Perforation, tamponade following cardiac cath-does not include stent closure.

SEQ. #: 2100
Long Name: Operative Approach
Short Name: OPApp
Definition: Indicate the initial operative approach.

Intent/Clarification:
The intent is to capture the **initial** operative approach:

- Full conventional sternotomy
- Partial sternotomy
- Sub-xiphoid
- Thoracotomy
- Thoracoabdominal Incision
- Percutaneous
- Port Access
- Other – includes right or left parasternal thoracotomy, transverse sternotomy, limited or mini thoracotomy, sub-costal approach

Commonly used approaches for the following devices:

- **Impella 2.0**
  - Percutaneous femoral
  - Percutaneous iliac
- **Impella 5.0**
  - Percutaneous femoral
  - Open femoral

    - Open aorta
    - Open iliac
- **VA ECMO**
    - Percutaneous femoral
    - Open Femoral
    - Percutaneous carotid
    - Percutaneous subclavian
    - Open subclavian

SEQ. #: 2105
Long Name: Operative Approach Converted
Short Name: ApproachCon
Definition: Indicate whether the operative approach was converted during the procedure.

Intent/Clarification: The intent is to capture whether the approach was converted

- Yes
- No

SEQ. #: 2110
Long Name: Robot Used
Short Name: Robotic
Definition: Indicate whether a robot was used during any part of the surgical procedure.

Intent/Clarification:

- Yes
- No

SEQ. #: 2115

Long Name: Robot Use Time Frame
Short Name: RobotTim
Definition: Indicate the time frame of robotic use.

Intent/Clarification: The intent is to the extent of the procedure where the robot was used.

- Used for entire operation
- Used for part of the operation

SEQ. #: 2120
Long Name: CAB
Short Name: OpCAB
Definition: Indicate whether coronary artery bypass grafting was done.

Intent/Clarification:
The intent is to capture procedures where distal bypass grafts were constructed to native coronary arteries.

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

***If yes, complete Section J.**

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

Note: Unroofing of an anomalous coronary artery - If only anomalous vessel CABG, then this should be captured as a congenital procedure, not ISOCAB. If in conjunction with other atherosclerotic vessels, then it is an ISOCAB only. If bypass is performed for an anomalous, kinked or damaged vessel, this vessel is counted as one diseased or abnormal vessel in Seq 1170.

Note: Myocardial bridging with no evidence of any atherosclerotic disease - If a bypass graft is performed for myocardial bridge then code as a CABG. If another procedure is performed to relieve the bridge then code as a congenital procedure. If the other procedure is performed in conjunction with other atherosclerotic vessels, then it is an ISOCAB only.

Note: Aortic Dissection Repair at one hospital and CAB at another hospital – Hospital #2 received a patient s/p aortic dissection repair from hospital #1 secondary to need for higher level of care. A CABG was performed at hospital # 2. The CABG is a return to OR on the first DCF for the first hospital. The second hospital captures the risk of the aorta surgery from the first hospital on a new DCF for the CABG.

SEQ. #: 2123
Long Name: Aorta Procedure Performed
Short Name: AortProc
Definition: Indicate whether a procedure was performed on the aorta.

Intent/Clarification: The intent is to capture procedures where procedures were performed involving the aorta. Aorta procedures for the purpose of the database refers to actual aorta procedures not stand-alone head or visceral vessels management without an additional aorta or planned staged aorta procedure performed.

Do not code Aortic Root Procedure when the surgeon performs only an annular enlargement with no other aortic root procedure in the aorta section, code this in Section K-1 Aortic Valve Section Seq 3460.

- Yes, planned

- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

***If Yes, complete Section M2**

SEQ. #: 2124
Long Name: Surgeon Input for Aortic Surgery Data Abstraction
Short Name: AortProcSurgInput
Definition: Indicate whether the surgeon provided input for the aortic surgery data abstraction.

Intent/Clarification: Indicates that the data manager has verified through interaction with the surgeon that the data reflects the pathology and the procedure performed. Use of surgeon worksheets or an operative note that provides information to abstract the data elements can be answered as "yes"

- Yes
- No

SEQ. #: 2129
Long Name: Valve
Short Name: OpValve
Definition: Indicate whether a surgical procedure was done on the Aortic, Mitral, Tricuspid or Pulmonic valves.

Intent/Clarification: The intent is to capture procedures where valve procedures were performed.

- Yes
- No

***If yes, complete Section K.**

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

Note: While undergoing TAVR procedure, surgery was converted to open AVR. If the site usually enters TAVRs into the STS database and the patient ends up converting to SAVR then the TAVR should not be captured as the index procedure, the SAVR should be entered as the index procedure and the preoperative risk of the failed TAVR should be captured.

Note: Stand-alone AngioVac Debulking / AngioVac-assisted extirpation of matter from the valve via percutaneous approach with cardiopulmonary bypass is an optional case to be entered into the ACSD.

SEQ. #: 2130
Long Name: Valve Prosthesis Explant
Short Name: ValExp
Definition: Indicate whether a prosthetic valve or annuloplasty was explanted during this procedure.

Intent/Clarification: The intent is to capture as much information as possible about explanted devices. This will assist with post market device surveillance and provide information on device longevity. Having this information will help surgeons and patients make informed decisions on device selection.

Code the valve explant even if the sewing cuff is retained.

Do not code a valve explant if a valve is implanted and explanted during the same operation due to the fact the valve did not work or fit.

***If Yes, complete Section K.**

SEQ. #: 2131
Long Name: VS-Aortic Valve
Short Name: VSAV
Definition: Indicate whether an aortic valve procedure was performed.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

SEQ.#: 2132

Long Name: AV-Aorta Procedure Performed

Short Name: AVAortaProcPerf
Definition - Indicate if a patient who underwent a procedure on the aortic valve also had a procedure on the thoracic aorta during this same procedure or during a planned hybrid/staged procedure.

Intent/Clarification:

- Yes
- No

Do not code Aortic Root Procedure when the surgeon performs only an annular enlargement with no other aortic root procedure in the aorta section, code this in Section K-1 Aortic Valve Section Seq 3460.

***If Yes, complete Section M2; If No, complete Section K.**

SEQ. #: 2133
Long Name: VS-Mitral Valve
Short Name: VSMV
Definition: Indicate whether a mitral valve procedure was performed.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

***If Yes, complete Section K2.**

SEQ. #: 2134
Long Name: VS-Tricuspid Valve
Short Name: VSTV
Definition: Indicate whether a tricuspid valve procedure was performed.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

***If Yes, complete Section K3.**

SEQ. #: 2135
Long Name: VS-Pulmonic Valve
Short Name: VSPV
Definition: Indicate whether a pulmonic valve procedure was performed.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

***If Yes, complete Section K4.**

SEQ. #: 2136

Long Name: Surgeon Input for Valve Surgery Data Abstraction
Short Name: OpValSurgInput
Definition: Indicate whether the surgeon provided input for the valve surgery data abstraction.

Intent/Clarification: Indicates that the data manager has verified through interaction with the surgeon that the data reflects the pathology and the procedure performed. Use of surgeon worksheets or an operative note that provides information to abstract the data elements can be answered as "yes"

SEQ.#: 2137
Long Name: Mechanical Assist Device / Ventricular Assist Device
Short Name: MechVentAssistDevice
Definition: Indicate if a patient had a mechanical assist device or ventricular assist device present on admission, or implanted, or explanted during this admission.

Intent/Clarification: Includes IABP, ECMO, temporary ventricular assist device and long-term ventricular assist devices.

***If Yes, complete Section L.**

Note: Patient has a VAD inserted and then later in the same episode of care has a heart transplant. In this scenario, the transplant is the index procedure in this EOC. The mechanical assist device should be coded as previous CV interventions.

SEQ. #: 2140
Long Name: Other Cardiac Procedure, except Afib
Short Name: OpOCard
Definition: Indicate whether another cardiac procedure was done (other than CABG and/or Valve and/or Aorta and/or Afib procedures). Code procedures that have a high likelihood of negatively impacting a patient's outcome (survival, quality of life, ability to recover) and/or prolong the patient's length of stay.

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Intent/Clarification: The intent is to capture Other Cardiac Procedures were performed**. Do not code minor procedures that do not add risk to the index procedure. Coding minor procedures in conjunction with a CABG or Valve removes the case from analysis in the isolated procedure categories.**

- Yes, planned
- Yes, unplanned due to unsuspected disease or anatomy
- Yes, unplanned due to surgical complication
- No

***If Yes, complete Section M.**

Examples of Other Cardiac Procedures:

- Subaortic Stenosis Resection
- Pulmonary Thromboembolectomy
- Myocardial Stem Cell Therapy
- LV Aneurysm Repair
- Arrhythmia Device placement– pacemaker, ICD, Implantable Recorder
- Lead Insertion / Lead Extraction
- Transmyocardial Revascularization (TMR)
- Cardiac Tumor
- Heart Transplant
- ASD / VSD Repair
- Pulmonary artery aneurysm repair
- Left ventriculotomy with removal of apical thrombus
- LV Thrombus Evacuation
- Planned PCI of the LAD done in the OR with the MVR
- Epicardial ablation performed for inappropriate sinus tachycardia
- Procedures performed on the great vessels that are directly attached to the heart: Superior vena cava; Inferior vena cava; Pulmonary arteries**;** Pulmonary veins.

Do not include:

- Removal of ICD, Pacemaker, Loop Recorder
- Removal of a pericardial cyst
- Placement of pericardial drain
- Extensive lysis of adhesions
- ECMO, Impella or IABP insertions
- Exploration (look see) of valve, aorta, etc…without a procedure performed

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SEQ. #: 2145
Long Name: Atrial Fibrillation Procedure Performed
Short Name: AFibProc
Definition: Indicate whether an atrial fibrillation procedure was performed.

Intent/Clarification: The intent is to capture when atrial fibrillation procedures were performed. This includes LAA obliteration and amputation. **Do not open this section to capture the existence of a previously placed Transcatheter Device**

***If Yes, complete Section M1.**

Epicardial botox injections for treatment of atrial fibrillation - Code this as yes Afib Procedure and in the a-fib section code primarily epicardial for lesion location and leave the method blank.

The surgical component of the Convergent MAZE procedure completed by a Cardiothoracic Surgeon is captured in the Afib section as primarily epicardial and Epicardial Posterior Wall Other (i.e. Convergent procedure).

SEQ. #: 2146
Long Name: Surgeon Input for Other Cardiac Afib Data Abstraction
Short Name: AFibProcSurgInput
Definition: Indicate whether the surgeon provided input for the other cardiac Afib procedure data abstraction.

Intent/Clarification: Indicates that the data manger confirms that because of interaction with the surgeon the data included reflects the pathology and the procedure performed. Use of surgeon worksheets or an operative note that provides information to abstract the data elements can be answered as "yes"

- Yes
- No

SEQ. #: 2150
Long Name: Other Cardiac Congenital Except Unicuspid, Bicuspid, or Quadricuspid Valve
Short Name: OCarCong
Definition: Indicate whether the patient had a congenital defect repair either in conjunction with, or as the primary surgical procedure. **Do not include ASD - Secundum, PFO, Unicuspid, Bicuspid, Quadricuspid Valve here as these are captured elsewhere.**

Congenital diagnoses and procedural list

Intent/Clarification: Indicate if a congenital procedure was performed.

- Yes
- No

Note: Unroofing of an anomalous coronary artery - If only anomalous vessel CABG, then this should be captured as a congenital procedure, not ISOCAB. If in conjunction with other atherosclerotic vessels, then it is an ISOCAB only. If bypass is performed for an anomalous, kinked or damaged vessel, this vessel is counted as one diseased or abnormal vessel in Seq 1170.

SEQ. #: 2155
Long Name: Other Non Card
Short Name: OpONCard
Definition: Indicate whether a non-cardiac procedure was done.

Intent/Clarification: The intent is to capture **when non-cardiac procedures that add risk to the index surgical procedure** are performed. The goal is to keep as many procedures as possible in the “isolated” category. Only code “yes” for procedures that

high likelihood of negatively impacting a patient's outcome (survival, quality of life, ability to recover) and/or prolong the patient's length of stay.

Do not code minor procedures that do not add risk to the index procedure. Coding minor procedures in conjunction with a CABG or Valve removes the case from analysis in the isolated procedure categories.

Examples of Procedures that are not captured as other non-cardiac procedures:

- EGD with dilatation of his esophagus for stricture in order to pass the TEE probe
- Open reduction internally fixation of the sternum with sternal plating
- VP shunt was externalized or simply “moved aside”
- Plication of a redundant left hemi-diaphragm.
- Repair of severe pectus excavatum
- Planned pectoral muscle flap closure for index surgery
- Cystoscopy, dilatation, and placement of a foley prior to incision
- Lung Wedge Resection, Segmentectomy
- Needle Biopsy
- Reconstruction of flail chest and sternal fracture

SEQ. #: 2195
Long Name: CPT-1 Code # 1
Short Name: CPT1Code1
Definition: Indicate the first CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2200
Long Name: CPT-1 Code # 2
Short Name: CPT1Code2
Definition: Indicate, if applicable, the second CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2205
Long Name: CPT-1 Code # 3
Short Name: CPT1Code3
Definition: Indicate, if applicable, the third CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2210
Long Name: CPT-1 Code # 4
Short Name: CPT1Code4
Definition: Indicate, if applicable, the fourth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2215
Long Name: CPT-1 Code # 5
Short Name: CPT1Code5
Definition: Indicate, if applicable, the fifth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2220
Long Name: CPT-1 Code # 6
Short Name: CPT1Code6
Definition: Indicate, if applicable, the sixth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2225
Long Name: CPT-1 Code # 7
Short Name: CPT1Code7
Definition: Indicate, if applicable, the seventh CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2230
Long Name: CPT-1 Code # 8
Short Name: CPT1Code8

Definition: Indicate, if applicable, the eighth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2235
Long Name: CPT-1 Code # 9
Short Name: CPT1Code9
Definition: Indicate, if applicable, the ninth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2240
Long Name: CPT-1 Code # 10
Short Name: CPT1Code10
Definition: Indicate, if applicable, the tenth CPT procedure code (CPT-1) pertaining to the surgery for which the data collection form was initiated.

Intent/Clarification: There is no STS list. Use whichever CPT codes were entered for procedures performed during this operation. Consult with your Billing/Coding Department, if applicable.

SEQ. #: 2245
Long Name: OR Entry Date And Time
Short Name: OREntryDT
Definition: Indicate the date and time, to the nearest minute (using 24-hour clock), that the patient entered the operating room. If the procedure was performed in a location other than the OR, record the time when the sterile field, or its equivalent, was set up.

Intent/Clarification: The intent is to capture the actual date and time the patient physically enters the operating room. For emergency procedures done outside the OR, this may be an estimated time.

Required date format: mm/dd/yyyy
Required time format: hh:mm (0-24 hour clock)

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

Update September 2020 – If a patient is undergoing a catheter based or EP procedure that is not required to be entered into the STS Database and the

patient has to convert to an open surgical procedure, for example, while undergoing a TAVR, surgery was converted to open SAVR, use the below directions for coding of OR entry and incision time:

- **For sites that have separate cath and OR logs. You will use the times on the OR log.**
- **For sites that do not have separate Cath/OR logs and continue to use one log, the OR entry time and OR incision time will be coded as the same time. In this scenario, the incision time will be the time of sternotomy or open incision to perform the emergent STS qualifying procedure.**

SEQ. #: 2250
Long Name: OR Exit Date And Time
Short Name: ORExitDT
Definition: Indicate the date and time, to the nearest minute (using 24-hour clock), that the patient exits the operating room. If the procedure was performed in a location other than the OR, record the time when the sterile field, or its equivalent, was taken down.

Intent/Clarification: The intent is to capture the actual date and time the patient physically leaves the operating room. This field is used to calculate post-operative ventilation time and therefore prolonged ventilation.

Required date format: mm/dd/yyyy.
Required time format: hh:mm (0-24 hour clock)

Note: If the patient dies in the OR, code the OR Exit date and time as the time of death.

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

Note: Patient underwent CABG surgery, the Physician closed the chest, and while moving the patient off the OR table the patient had a VFIB arrest. The patient was placed back on the OR table, IABP Inserted, and chest re-opened and an additional bypass graft performed. The chest was closed, and the patient was taken off the table to another Hybrid OR room where a Cath Lab Physician placed an Impella. After the Impella was placed, the patient was transferred to the ICU. The hybrid room is across the hall from the previous OR Room. Same staff attended and care was not interrupted. In this scenario, code as all one procedure. The patient never left the OR in this situation. The time of exit from hybrid OR would be OR exit time.

SEQ. #: 2251
Long Name: General Anesthesia
Short Name: GenAnes
Definition: Indicate whether general anesthesia was used at any time during this procedure.

Intent/Clarification: The intent of this field is to capture if general anesthesia was used at any time during the procedure, regardless if they started with procedural sedation.

SEQ. #: 2252
Long Name: Procedural Sedation
Short Name: ProcSed
Definition: Indicate whether the procedure was performed under sedation (also referred to as “moderate sedation” or “conscious sedation”) and not general anesthesia.

Intent/Clarification: The intent is to identify whether moderate or conscious sedation was used to complete the procedure, instead of general anesthesia.

SEQ. #: 2253
Long Name: Intubation
Short Name: Intubate
Definition: Indicate the status of intubation.

Intent/Clarification: The intent is to identify whether the patient required endotracheal or tracheal intubation.

- Yes, prior to entering OR for this procedure
- Yes, in the OR for this procedure
- No

SEQ. #: 2265
Long Name: Skin Incision Start Date And Time
Short Name: SIStartDT
Definition: Indicate the date and time, to the nearest minute (using 24-hour clock), that the first skin incision, or its equivalent, was made.

Intent/Clarification: For open procedures, use the first incision, i.e. vein harvest incision; for the skin incision date and time. Do not code access site stab wounds. First skin incision would also apply to Carotid, Vascular, Thoracic and Other non-cardiac procedures.

For percutaneous procedures use the time at which local anesthetic was first administered for vascular access, or the time of the first attempt at vascular access for the procedure (use whichever is earlier).

Required date format: mm/dd/yyyy
Required time format: hh:mm (0-24 hour clock)

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

Update September 2020 – If a patient is undergoing a catheter based or EP procedure that is not required to be entered into the STS Database and the patient has to convert to an open surgical procedure, for example, while

undergoing a TAVR, surgery was converted to open SAVR, use the below directions for coding of OR entry and incision time:

- **For sites that have separate cath and OR logs. You will use the times on the OR log.**
- **For sites that do not have separate Cath/OR logs and continue to use one log, the OR entry time and OR incision time will be coded as the same time. In this scenario, the incision time will be the time of sternotomy or open incision to perform the emergent STS qualifying procedure.**

SEQ. #: 2270
Long Name: Skin Incision Stop Date And Time
Short Name: SIStopDT
Definition: Indicate the date and time, to the nearest minute (using 24-hour clock), that the skin incision was closed, or its equivalent. If the patient leaves the operating room with an open incision, collect the time that the dressings were applied to the incision.

Intent/Clarification: Use the documented time the incision was closed.

Required date format: mm/dd/yyyy
Required time format: hh:mm (0-24 hour clock)

Note: If the patient dies in the OR after incision, but prior to incision stop time, code the incision stop date and time as the time of death.

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the CABG procedure.

SEQ. #: 2280
Long Name: Appropriate Antibiotic Selection
Short Name: AbxSelect
Definition: Indicate if there was documentation of an order for a first generation or second-generation cephalosporin prophylactic antibiotic, documentation that it was given preoperatively or in the event of a documented allergy an alternate antibiotic choice is ordered and administered.

Intent/Clarification: Refer to the antibiotic guidelines on the STS website.

http://www.sts.org/resources-publications/clinical-practice-credentialing-guidelines/antibiotic-guidelines

- Yes
- No
- Exclusion - The reason for not ordering appropriate prophylactic antibiotic is documented in the medical record.

An alternative antibiotic can be given as the primary (prophylactic) antibiotic for a patient with a PCN allergy as deemed appropriate by hospital infectious disease consultant.

Standing orders are acceptable as long as an Infection Disease Consultant was involved in the development of the orders.

Code Exclusion for:

- Patients who had a principal diagnosis suggestive of preoperative infectious diseases.

- Patients with physician/advanced practice nurse/physician assistant documented infection prior to surgical procedure of interest.

- Patients who were receiving antibiotics more than 24 hours prior to surgery.

SEQ. #: 2285
Long Name: Appropriate Antibiotic Administration Timing
Short Name: AbxTiming
Definition: Indicate whether prophylactic antibiotics were initiated/started within one hour of surgical incision or start of procedure if no incision required (two hours if receiving Vancomycin or fluoroquinolone). If no incision is required, then the antibiotic must be started by the start of the procedure. The surgical incision time is the time of the first incision, regardless of location.

Intent/Clarification: The antibiotic must be initiated / started within one hour prior to surgical incision (two hours if receiving Vancomycin or fluoroquinolone). If no incision is required, then it must be started by the start of procedure. Refer to antibiotic guidelines on the STS website.

http://www.sts.org/resources-publications/clinical-practice-credentialing-guidelines/antibiotic-guidelines

- Yes
- No
- Exclusion

Code Exclusion for:

- Patients who had a principal diagnosis suggestive of preoperative infectious diseases.

- Patients with physician/advanced practice nurse/physician assistant documented infection prior to surgical procedure of interest.

- Patients who were receiving antibiotics more than 24 hours prior to surgery. **Update July 2020 -The intent of the exclusion is to eliminate patients who are currently infectious and currently receiving antibiotics on a regular schedule within 24 hr of surgery.**

If hospitals choose to develop a pre-op antibiotic protocol where 2 antibiotics are given, then both must be administered within one hour of surgical incision or start of procedure if no incision required (two hours if receiving Vancomycin or fluoroquinolone) in order to code YES to Seq 2285.

SEQ. #: 2290
Long Name: Appropriate Antibiotic Discontinuation
Short Name: AbxDisc
Definition: Indicate whether the prophylactic antibiotics were ordered to be discontinued OR were discontinued within 48 hours after surgery end time. Determining the timeframe (within 48 hours) begins at the "surgical end time".

Intent/Clarification: Refer to antibiotic guidelines on the STS website.

- Yes
- No
- Exclusion

There is no exclusion for adjustment of antibiotic dosing for patients with renal insufficiency. The antibiotic should still be discontinued within 48 hours.

Code Exclusion for:

- Patients who had a principal diagnosis suggestive of preoperative infectious diseases.
- Patients with physician/advanced practice nurse/physician assistant documented infection prior to surgical procedure of interest.

- Patients who were receiving antibiotics more than 24 hours prior to surgery. **Update July 2020 -The intent of the exclusion is to eliminate patients who are currently infectious and currently receiving antibiotics on a regular schedule within 24 hr of surgery.**

- Patients who were diagnosed with infections within two days (three days for CABG or Other Cardiac Surgery) after Surgery End Date.

http://www.sts.org/resources-publications/clinical-practice-credentialing-guidelines/antibiotic-guidelines
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SEQ. #: 2296
Long Name: Temperature Measured
Short Name: TempMeas
Definition: Indicate whether the patient's core temperature was measured during the procedure.

Intent/Clarification:

SEQ. #: 2300
Long Name: Lowest Temperature
Short Name: LwstTemp
Definition: Record the patient's lowest core temperature in the operating room in degrees centigrade.

Intent/Clarification: The intent is to capture the lowest documented temperature intraoperatively.

SEQ. #: 2305
Long Name: Lowest Temperature Source
Short Name: LwstTempSrc
Definition: Indicate the source where the lowest core temperature was measured.

Intent/Clarification: Temperatures are typically documented on perfusion record or anesthesia record. When coding temperature, sites are to use the same source consistently for all cases. For example, use bladder temperature on all cases and in the event, this is not documented, sites should identify the second priority source to use.

Core temperature can be accurately monitored using Esophageal, NP, bladder rectal, oxygenator arterial outlet blood and jugular bulb venous (JB) methods. It is encouraged that sites will choose one of these sources as their priority source.

Venous temperatures on CPB, skin or tympanic methods are available, however not as accurate.

- Esophageal
- CPB venous return
- Bladder
- Nasopharyngeal
- Tympanic
- Rectal
- Jugular-Venous
- Oxygenator arterial outlet blood (CPB Arterial Blood)
- Other
- Unknown

SEQ. #: 2310
Long Name: Lowest Intra-op Hemoglobin
Short Name: LwstIntraHemo
Definition: Enter the lowest measured hemoglobin recorded in the operating room.

Intent/Clarification: If you do not have measured lab values, you may use calculated values. The DM should not calculate the value, it must be calculated and documented in the medical record. The unit of measurement for Hgb is g/dl or g/100 ml or g%.

**Note that Hemoglobin (Hgb) should always be less that the Hematocrit (Hct).

SEQ. #: 2315

Long Name: Lowest Hematocrit

Short Name: LwstHct

Definition: Enter the lowest measured hematocrit recorded in the operating room.

Intent/Clarification: If you do not have measured lab values, you may use calculated values. The DM should not calculate the value, it must be calculated and documented in the medical record. The unit of measurement for Hct is %.

**Note that Hemoglobin (Hgb) should always be less that the Hematocrit (Hct).

SEQ. #: 2320
Long Name: Highest Intra-op Glucose
Short Name: HighIntraGlu
Definition: Enter the highest glucose recorded in the operating room.

Intent/Clarification: Typically documented in laboratory tests, anesthesia record, or perfusion record. The unit of measurement for Glucose is mg/dl.

SEQ. #: 2325
Long Name: Perfusion Strategy
Short Name: CPBUtil
Definition: Indicate the level of CPB or coronary perfusion used during the procedure.

Intent/Clarification:

- **None**: No CPB (cardiopulmonary bypass) or coronary perfusion used during the procedure.
- **Left Heart Bypass:** Left heart bypass is utilized to remove oxygenated blood from the left atrium and return it to the distal descending aorta or femoral artery. This procedure allows repair or replacement of the descending thoracic aorta while regulating blood flow, minimizing surface area contact activation, and reducing heparin requirements.
- **Combination**: With or without CPB and/or with or without coronary perfusion at any time during the procedure (capture conversions from off-pump to on-pump only):
    - At start of procedure: No CPB/No Coronary Perfusion -> conversion to -> CPB
    - At start of procedure: No CPB/No Coronary Perfusion -> conversion to -> Coronary perfusion
    - At start of procedure: No CPB/No Coronary Perfusion -> conversion to -> Coronary perfusion -> conversion to -> CPB
- **Full CPB** or coronary perfusion was used for the entire procedure

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SEQ. #: 2330
Long Name: CPB Utilization - Combination Plan
Short Name: CPBCmb
Definition: Indicate whether the combination procedure from off-pump to on-pump was a planned or an unplanned conversion.

Intent/Clarification: To capture if the operation was intended to be an off-pump case and, for some clinical reason, required cardiopulmonary bypass to complete the operation.

- **Planned** - The surgeon intended to treat with any of the combination options described in "CPB utilization"
- **Unplanned** - The surgeon did not intend to treat with any of the combination options described in "CPB utilization"

SEQ. #: 2335
Long Name: CPB Utilization - Unplanned Combination Reason
Short Name: CPBCmbR
Definition: Indicate the reason that the procedure required the initiation of CPB and/or coronary perfusion.

Intent/Clarification: To capture the reason that caused the procedure to require the initiation of cardiopulmonary bypass:

- Exposure/visualization
- Bleeding
- Inadequate size and/or diffuse disease of the distal vessel
- Hemodynamic instability (hypotension/arrhythmias)
- Conduit quality and/or trauma
- Other

General Information – Cannulation Site

The cannulation site refers to where the catheter is inserted. Select all that apply.

The intent is to only capture coronary perfusion cannulation sites.

SEQ.#: 2336
Long Name: Arterial Cannulation Insertion Site
Short Name: ArtCanninsertSite
Definition - Indicate the insertion site for the arterial cannulation. If multiple cannulation occurred, select all that apply.

Intent/Clarification: The intent is to only capture coronary perfusion cannulation sites.

- Aortic - The arterial cannulation site was the aorta.
- Axillary - The arterial cannulation site was the axillary artery.
- Femoral -The arterial cannulation site was the femoral artery.
- Innominate - The arterial cannulation site was the innominate artery.
- Other -There was any other arterial cannulation site.

SEQ.#: 2361

Long Name: Venous Cannulation Insertion Site
Short Name: VenCanninsertSite
Definition - Indicate the insertion site for the venous cannulation. If multiple cannulation occurred, select all that apply.

Intent/Clarification: The intent is to only capture coronary perfusion cannulation sites. For example, bicaval cannulation venous site = right atrium and SVC. Update **September 2020 - All bicaval cannulation will be captured as as RA and SVC.**

- Femoral - The venous cannulation site was the femoral vein.
- Pulmonary Vein - The venous cannulation site was the pulmonary vein.
- Jugular - The venous cannulation site was the jugular vein.
- SVC -The venous cannulation site was the superior vena cava
- Rt. Atrial -The venous cannulation site was the right atrium.
- Lt. Atrial - The venous cannulation site was the right atrium.
- Other - The venous cannulation site was any other venous cannulation site

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SEQ. #: 2400
Long Name: Cardiopulmonary Bypass Time
Short Name: PerfusTm
Definition: Indicate the total number of minutes that systemic return is diverted into the cardiopulmonary bypass (CPB) circuit and returned to the systemic system. This time period (Cardiopulmonary Bypass Time) includes all periods of cerebral perfusion and sucker bypass. This time period (Cardiopulmonary Bypass Time) excludes any circulatory arrest and modified ultrafiltration periods. If more than one period of CPB is required during the surgical procedure, the sum of all the CPB periods will equal the total number of CPB minutes.

Intent/Clarification: The total time in minutes. This information can be obtained from the perfusion record or in the Surgeon's dictation.

SEQ. #: 2405
Long Name: Circulatory Arrest
Short Name: CircArr
Definition: Indicate whether or not circulatory arrest was utilized during the procedure.

Intent/Clarification: Circulatory arrest is defined as the complete cessation of blood flow to the patient. Circulatory arrest is a surgical technique that involves cooling the body of the patient and stopping blood circulation and is not the same as coronary-pulmonary bypass time. It is used in cardiac surgery when doing procedures such as aortic arch and Pulmonary Thromboembolectomies.

The total time in minutes. This information can be obtained from the perfusion record or in the Surgeon's dictation.

SEQ. #: 2406
Long Name: Lowest Hematocrit during CPB
Short Name: LowestHematocritCPB

Definition - Indicate the patient's lowest hematocrit after CPB initiation and prior to CPB discontinuation.

Intent/Clarification: If you do not have measured lab values, you may use calculated values. The DM should not calculate the value, it must be calculated and documented in the medical record. The unit of measurement for Hct is %.

SEQ. #: 2410
Long Name: Circulatory Arrest Time Without Cerebral Perfusion
Short Name: DHCATm
Definition: Indicate the total number of minutes of deep hypothermic circulatory arrest without cerebral perfusion. If more than one period of circulatory arrest is required during this surgical procedure, the sum of these periods is equal to the total duration of circulatory arrest.

Intent/Clarification: The total time in minutes. This information can be obtained from the perfusion record or in the Surgeon's dictation.

SEQ. #: 2415
Long Name: Circulatory Arrest With Cerebral Perfusion
Short Name: CPerfUtil
Definition: Indicate whether circulatory arrest with cerebral perfusion was performed.

Intent/Clarification: Selective cerebral perfusion is a technique that involves providing blood flow and metabolic support to the brain while the blood flow to the rest of the body is stopped during circulatory arrest. This approach is commonly used during complex surgery that requires circulatory arrest. It offers more protection for the brain and minimizes the risk of stroke and other serious complications.

The total time in minutes. This information can be obtained from the perfusion record or in the Surgeon's dictation.

SEQ. #: 2420
Long Name: Cerebral Perfusion Time
Short Name: CPerfTime
Definition: Indicate the total number of minute's cerebral perfusion was performed. This would include antegrade and/or retrograde cerebral perfusion strategies.

Intent/Clarification: If more than one period of circulatory arrest with cerebral perfusion was used, add the times for the total circulatory arrest with cerebral perfusion time.

The total time in minutes. This information can be obtained from the perfusion record or in the Surgeon's dictation.

SEQ. #: 2425
Long Name: Cerebral Perfusion Type
Short Name: CPerfTyp
Definition: Indicate type of cerebral perfusion utilized.

Intent/Clarification: Indicate the type of cerebral perfusion:

- Antegrade
- Retrograde
- Both antegrade and retrograde

SEQ. #: 2426
Long Name: Total Circulatory Arrest Time
Short Name: TotCircArrTm
Definition: Calculated variable measuring circulatory arrest without cerebral perfusion time plus any cerebral perfusion time.

Intent/Clarification: This value will be automatically generated by the software. It will total the number of minutes of circulatory arrest without cerebral perfusion + the total number of minutes of circulatory arrest with cerebral perfusion.

SEQ. #: 2427
Long Name: Cooling Time prior to Circ Arrest
Short Name: CoolingTimePriorCircArr
Definition - Indicate the time it took to cool the patient prior to circulatory arrest. This is the time from CPB initiation to start of circulatory arrest.

Intent/Clarification: This information can be obtained from the perfusion record or in the Surgeon's dictation. Time is captured in minutes. Cooling takes approximately 30 to 40 minutes, depending on the size of the patient.

SEQ. #: 2430
Long Name: Aortic Occlusion
Short Name: AortOccl
Definition: Indicate the technique of aortic occlusion used.

Intent/Clarification: Identify the method used to prevent blood from circulating through the heart and to allow the delivery of cardioplegia into the aortic root to arrest the heart. In procedures where cardioplegia is not administered for myocardial protection, but a cross clamp is applied to isolated diseased sections of the aorta (i.e. descending thoracic or thoracoabdominal aneurysm repairs) the appropriate response to aortic occlusion is aortic cross clamp. You should populate the cross-clamp time field with the appropriate minutes of cross clamp time. The Cardioplegia field would be equal to None.

Externally, the aortic cross clamp is used. Internally, balloon occlusion is used. Choose one of the following:

- None - beating heart
- None - fibrillating heart
- Aortic Cross clamp
- Balloon Occlusion

SEQ. #: 2435
Long Name: Cross Clamp Time (min)
Short Name: XClampTm
Definition: Indicate the total number of minutes that the coronary circulation is mechanically isolated from systemic circulation, either by an aortic cross clamp or systemic circulatory arrest.

Intent/Clarification:
Note: For the following two operations: (1) “Transplant, Heart”, and (2) “Transplant, Heart and Lung”, the field “Cross Clamp Time” will be defined as the cross-clamp time of the **donor** heart. Therefore, these two operations represent the only operations where the field “Cross Clamp Time” can be greater than the field “Cardiopulmonary Bypass Time.

When performing descending aorta surgery, when the beating heart is perfusing the upper body and the bypass pump is perfusing the lower body, cross clamp time is captured from start to finish of the entire cross clamp time. This means any time the clamp is on the aorta regardless if the clamp is moved.

SEQ. #: 2440
Long Name: Cardioplegia Delivery
Short Name: CplegiaDeliv
Definition: Indicate the delivery method of cardioplegia if used.

Intent/Clarification: Cardioplegia is a solution that is used to cause the heart to arrest as documented by the surgeon or perfusionist. Refer to the perfusion record or Surgeon’s dictation.

- None, if not used
- Antegrade - to deliver cardioplegia solution to the heart via the coronary ostia (aortic root) in the normal direction of blood flow.
- Retrograde - to deliver cardioplegia solution to the heart via the coronary sinus in the reverse direction of normal blood flow.
- Both

Retrograde autologous priming (RAP) is not the same as Retrograde cardioplegia delivery. Retrograde autologous priming (RAP) is a means to effectively and safely restrict the hemodilution caused by the direct homologous blood transfusion and reduce the blood transfusion requirements during cardiac surgery.

SEQ. #: 2445
Long Name: Cardioplegia Type
Short Name: CplegiaType
Definition: Indicate the type of cardioplegia used.

Intent/Clarification: Choose one of following:

- **Blood** (If any blood is contained in the solution, any ratio). Includes the following solutions:
    - Combination of blood +St. Thomas solution (i.e. Plegisol)
    - DelNido cardioplegia
    - Microplegia
    - 4:1 or 8:1 cardioplegia
    - Modified Buckberg Cardioplegia
- **Crystalloid** (If solution is **only** crystalloid)
- **Both** (If both types of solutions are used) Use “Both” if two different solutions were used during the procedure, 1 with blood and 1 crystalloid
- **Other**

SEQ. #: 2450
Long Name: Cerebral Oximetry Used
Short Name: CerOxUsed
Definition: Indicate whether cerebral oximetry was used.

Intent/Clarification: Indicate if cerebral oximetry was used during the operative procedure. Cerebral oximetry is like pulse oximetry in that it uses differences in light absorption between oxygenated and deoxygenated hemoglobin to measure regional oxygen saturation.

Cerebral oximetry is most often documented on the Anesthesia record and may be documented as rSO2.

SEQ. #: 2515
Long Name: Intraop Blood Products
Short Name: IBldProd
Definition: Indicate whether blood products were transfused any time intraoperatively during the initial surgery. Intraoperatively is defined as any blood started after OR Entry before OR Exit.

Intent/Clarification: Intraoperatively is defined as any blood started inside of the OR. For these Intraop Blood Product data fields, **the intent is to ONLY collect blood products that were transfused any time intraoperatively during the INITIAL SURGERY**. This includes RBCs, FFP, Platelets or Cryoprecipitate.

- Yes
- No, not given
- Patient Refused - This may be found in the history and physical, surgical consultation or in a specific consent/refusal form.

SEQ. #: 2520
Long Name: Intraop Blood Products - RBC Units
Short Name: IBdRBCU

Definition: Indicate the number of units of packed red blood cells that were transfused intraoperatively. Do not include autologous, cell-saver, pump-residual or chest tube recirculated blood.

Intent/Clarification: Do not include autologous, cell-saver, pump-residual or chest tube recirculated blood. This can be found in the EMR, anesthesia or operative record or blood transfusion records.

SEQ. #: 2521
Long Name: Intraop Blood Products - Platelet Dose Pack
Short Name: IBdPlatDosePk
Definition- Indicate the total number of platelet dose packs administered from OR Entry to OR Exit. A dose pack is not the same as unit. Please see intent/clarification for further direction.

Intent/Clarification: This can be found in the EMR, anesthesia or operative record or blood transfusion records. The number of platelet dose packs transfused during the surgical procedure while the patient was in the OR.

A dose pack may consist of 4, 6, 8, 10, or any number of donor platelet units each from a separate donor which is pooled into a dose pack (single bag) for transfusion. A dose pack (single bag) is counted as 1 despite the number of platelet units in a dose pack. For example, anesthesia documents giving a 10 pack of platelets, code as 1 dose pack.

Platelets can be aggregated from several donors or be designated as single donor platelets. It is imperative that each site understand their institution’s definition for Random Donor Platelets (RDP) and Single Donor Platelets (SDP).

SEQ. #: 2525
Long Name: Intraop Blood Products - FFP Units
Short Name: IBdFFPU
Definition: Indicate the number of units of fresh frozen plasma that were transfused intraoperatively.

Intent/Clarification: This can be found in the EMR, anesthesia or operative record or blood transfusion records.

SEQ. #: 2535
Long Name: Intraop Blood Products - Cryo Units
Short Name: IBdCryoU
Definition: Indicate the number of units of cryoprecipitate that were transfused intraoperatively. One bag of cryo = one unit. The number of units is not volume dependent.

Intent/Clarification: This can be found in the EMR, anesthesia or operative record or blood transfusion records.

SEQ. #: 2545
Long Name: Intraop Clotting Factors
Short Name: IntraClotFact
Definition: Indicate whether clotting factors were administered intraoperatively.

Intent/Clarification: Code YES for systemic clotting factors. This does not include topical clotting factors.

- Yes, Factor VIIa
- Yes, Factor VIII
- Yes, FEIBA (Anti-Inhibitor Coagulant Complex)
- Yes, Composite, includes Platelet-rich Plasma
- No

SEQ. #: 2546

Long Name: Intraop Prothrombin Complex Concentrate

Short Name: IntraopProComCon

Definition: Indicate whether prothrombin complex concentrate (i.e.K-Centra) was given intraoperatively.

Intent/Clarification:

SEQ. #: 2556
Long Name: Intraop Antifibrinolytic Medication Given
Short Name: IAntifibMedGiven
Definition: Indicate if an antifibrinolytic medication was used from OR Entry to OR Exit. If more than one was administered, choose all that apply.

Intent/Clarification: The intent is to capture if Epsilon Amino-Caproic Acid (Amicar), Tranexamic Acid, and/or Aprotinin medications was used. The STS is not collecting other medications in this field.

SEQ. #: 2557
Long Name: Intraop Antifibrinolytic Medication
Short Name: AntifibMed
Definition: Indicate if an antifibrinolytic medication was used from OR Entry to OR Exit. If more than one was administered, choose all that apply.

Intent/Clarification: The intent is to capture if the below medications were used. The STS is not collecting other medications in this field.

- Epsilon Amino-Caproic Acid - the patient received Epsilon Amino-Caproic Acid

(Amicar) in the operating room.
- Tranexamic Acid - the patient received Tranexamic Acid in the operating room.
- Aprotinin - the patient received Aprotinin in the operating room. This product is not currently available in the USA. It may be used in International sites.

SEQ. #: 2560
Long Name: Intraop TEE post procedure
Short Name: InOpTEE
Definition: Indicate if a transesophageal echocardiogram (TEE) was performed after CPB prior to OR Exit time.

Intent/Clarification: Indicate if a transesophageal echocardiogram (TEE) was performed intraoperatively following the procedure after the patient is removed from Cardiopulmonary Bypass prior to OR Exit time. A TEE is performed by passing a small tube thru the patient's mouth into the esophagus to typically assess the efficiency of the patient's heart valves and ejection fraction (efficiency of the left ventricle). At this point of the surgery it is done to assess the valves and to obtain ejection fraction.

General Concepts Valve Disease and Regurgitation

If valve regurgitation is dictated from echocardiogram as "NO SIGNIFICANT REGURGITATION", code none.

If the Echo indicates that the native valve has physiological insufficiency, code as No insufficiency.

For echo's that provide insufficiency in terms of +1, +2, +3, and +4, you cannot assume that +1 equals trace etc... Please work with your echo dept to develop a protocol that clearly defines what the scoring system equals in terms of descriptive terminology. Have this protocol available in the event of an audit.

In a situation where the only documentation that you have is that the valve is 'structurally normal' (there is no documentation of stenosis or insufficiency). Code this as No to regurgitation. This documentation implies that the valve is normal without disease or regurgitation.

If you do not have any documentation of valve insufficiency, then code insufficiency as Not Documented.

Update August 2020 - If there are multiple values for the valve regurgitation within the same echo such as Under the Mitral Value is says moderate regurgitation and Under Impression is states mild regurgitation, use the value on the final impression / conclusion / summary from the reading physician.

General Concepts for For Hemodynamic/Cath/ECHO Values and Measurements / Dimensions / Valve Area

Hemodynamic/Cath/ECHO values that are recorded as greater than or less than a value, code the value just below or above the reported value. For example, if echo reports a RVSP of < 35, code as 34, in addition if it is documented as > 35, then code 36.

SEQ. #: 2565
Long Name: Post Repair TEE Aortic Insufficiency
Short Name: PRepAR
Definition: Indicate the highest level of aortic insufficiency/ regurgitation found on post CPB intraop TEE prior to and closest to OR Exit.

Intent/Clarification: Indicate the level of aortic insufficiency obtained by the intraoperative post-procedure TEE prior to the patient leaving the OR after the surgical procedure is complete. Obtain the amount closest to OR Exit Time. Mild-to-Moderate should be coded as moderate; moderate to severe should be coded as severe. Amount of AR should be the LAST ASSESSMENT before leaving the operating room. For example: if patient has aortic repair, separates from CPB and finds moderate AR, surgeon goes back on and re-fixes, comes off and finds no AR, it should be recorded as none.

Choices include**:**

- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

If the valve is reported as “normal” code “none”

If the the intra-op post TEE results, states "no change" from the intra-op pre-bypass TEE, then the pre-bypass values can be used.

Choose not documented for the highest level of insufficiency if the test was performed and insufficiency is not reported.

SEQ. #: 2566
Long Name: Aortic Gradient - Post Repair Mean
Short Name: PRepAGradM
Definition: Indicate the mean aortic valve gradient in mmHg on TEE in the OR post Cardiopulmonary Bypass, prior to and closest to OR Exit.

Intent/Clarification: Record the mean aortic valve gradient obtained from the TEE intraoperatively post-procedure.

The aortic mean gradient is the mean of the amount of pressure across the aortic valve and should be reported as a pressure in millimeters of Mercury (mmHg).

FAQ July 2020 - Post repair AV Mean gradient was reported as 7-10 mmHg. How should I code this?
Answer - Capture the highest value in this range. Code as 10 mmHg. This concept also applies to SEQ 2571 MV mean gradient and SEQ 2576 TV mean gradient.

SEQ. #: 2567
Long Name: Post Repair Aortic Paravalvular Leak
Short Name: PRepAPVL
Definition: Indicate whether there was an aortic paravalvular leak noted on TEE in the OR after Cardiopulmonary Bypass, prior to and closest to OR Exit.

Intent/Clarification: Indicate if any amount of leakage was identified around the aortic valve intraoperatively post-procedure. This field is for current and/or prior prosthetic valves. It can be coded when a new valve is implanted or for a valve that was implanted during a previous operation.

Choices are:

- No Prosthetic Valve
- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

SEQ. #: 2570
Long Name: Post Repair TEE Mitral Insufficiency
Short Name: PRepMR
Definition: Indicate the highest level of mitral insufficiency/ regurgitation found on post Cardiopulmonary Bypass intraop TEE prior to and closest to OR Exit.

Intent/Clarification: Indicate the level of mitral valve insufficiency obtained by the intraoperative post-procedure TEE prior to the patient leaving the OR after the surgical procedure is complete.

Insufficiency is also called mitral regurgitation (MR) in which the valve does not seal properly and allows too much blood to return to the left atrium. Mild-to-Moderate should be coded as moderate; moderate to severe should be coded as severe. Amount of MR should be the LAST ASSESSMENT before leaving the operating room. For example: if patient has mitral repair, separates from CPB and finds moderate MR, surgeon goes back on and re-fixes, comes off and finds no MR, it should be recorded as none

Choices include**:**

- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

If the valve is reported as “normal” code “none”

If the the intra-op post TEE results, states "no change" from the intra-op pre-bypass TEE, then the pre-bypass values can be used.

Choose not documented for the highest level of insufficiency if the test was performed and insufficiency is not reported.

SEQ. #: 2571
Long Name: Mitral Gradient - Post Repair Mean
Short Name: PRepMGradM
Definition: Indicate the mean mitral valve gradient in mmgHg on TEE in the OR post Cardiopulmonary Bypass, after the procedure prior to and closest to OR Exit.

Intent/Clarification: Record the mean mitral valve gradient obtained from the TEE intraoperatively post-procedure.

The mitral mean gradient is the mean of the amount of pressure across the mitral valve and should be reported as a pressure in millimeters of Mercury (mmHg).

FAQ July 2020 - Post repair MV Mean gradient was reported as 7-10 mmHg. How should I code this?
Answer - Capture the highest value in this range. Code as 10 mmHg. This concept also applies to SEQ 2566 AV mean gradient and SEQ 2576 TV mean gradient.

SEQ. #: 2572
Long Name: Post Repair Mitral Paravalvular Leak
Short Name: PRepMPVL
Definition: Indicate whether there was a mitral paravalvular leak noted on TEE in the OR after Cardiopulmonary Bypass, prior to and closest to OR Exit.

Intent/Clarification: Indicate if any amount of leakage was identified around the mitral valve intraoperatively post-procedure. This field is for current and/or prior prosthetic valves. It can be coded when a new valve is implanted or for a valve that was implanted during a previous operation.

Choices are:

- No Prosthetic Valve
- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

SEQ. #: 2575
Long Name: Post Repair TEE Tricuspid Insufficiency
Short Name: PRepTR
Definition: Indicate the highest level of tricuspid insufficiency/ regurgitation found on post Cardiopulmonary Bypass intraop TEE prior to and closest to OR Exit.

Intent/Clarification: Indicate the level of tricuspid valve insufficiency obtained by the intraoperative post-procedure TEE prior to the patient leaving the OR after the surgical

procedure is complete. Mild-to-Moderate should be coded as moderate; moderate to severe should be coded as severe. Amount of TR should be the LAST ASSESSMENT before leaving the operating room.

Choices include**:**

- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

If the valve is reported as “normal” code “none”

If the the intra-op post TEE results, states "no change" from the intra-op pre-bypass TEE, then the pre-bypass values can be used.

Choose not documented for the highest level of insufficiency if the test was performed and insufficiency is not reported.

SEQ. #: 2576
Long Name: Tricuspid Gradient - Post Repair Mean
Short Name: PRepTGradM
Definition: Indicate the mean tricuspid valve gradient in mmgHg on TEE in the OR post Cardiopulmonary Bypass, after the procedure prior to and closest to OR Exit

Intent/Clarification: Record the mean tricuspid valve gradient obtained from the TEE intraoperatively post-procedure.

The tricuspid mean gradient is the mean of the amount of pressure across the tricuspid valve and should be reported as a pressure in millimeters of Mercury (mmHg).

FAQ July 2020 - Post repair TV Mean gradient was reported as 7-10 mmHg. How should I code this?
Answer - Capture the highest value in this range. Code as 10 mmHg. This concept also applies to SEQ 2571 MV mean gradient and SEQ 2566 AV mean gradient.

SEQ. #: 2577
Long Name: Post Repair Tricuspid Paravalvular Leak
Short Name: PRepTPVL
Definition: Indicate whether there was a tricuspid paravalvular leak noted on TEE in the OR after Cardiopulmonary Bypass, prior to and closest to OR Exit

Intent/Clarification: Indicate if any amount of leakage was identified around the tricuspid valve intraoperatively post-procedure. This field is for current and/or prior prosthetic valves. It can be coded when a new valve is implanted or for a valve that was implanted during a previous operation.

Choices are:

- No Prosthetic Valve
- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not Documented

General Concepts for Ejection Fraction (EF)

If a percentage range is reported, report a whole number using the “mean”. For example, a range of 55-60 is coded as 58%.

If you have a 3D mode, it will take precedence over the 2D or M mode. If you have a 2D mode and M mode, the 2D mode will take precedence over the M mode.

If there are multiple values for the EF within the intra-op echo such as Under the Left Ventricle the EF is 35% and Under Impression LVEF 35-40%, use the value on the final impression / conclusion / summary from the reading physician.

If multiple methods of measurement of EF occur within in the same final impression / conclusion / summary on the intra-op echo report, use the following: The priority source for EF is as follows:

- 3D calculated EFs
- Simpsons or biplane calculated EF
- 2D calculated EF
- Visual EF

https://www.asecho.org/wp-content/uploads/2015/01/ChamberQuantification2015.pdf

For echo reports that have a descriptive term such as normal documented in the impression / conclusion / summary for EF and the measurement portion of the report says 60-70% by visual estimate, use the numerical values first and capture as 65%. Use descriptive terms when you have no numerical values.

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

SEQ. #: 2581
Long Name: Ejection Fraction Measured Post Procedure
Short Name: PPEFMeas
Definition: Indicate whether the ejection fraction was measured on TEE in the OR after Cardiopulmonary Bypass, prior to and closest to OR Exit.

Intent/Clarification: Indicate if an ejection fraction was obtained intraoperatively by an intra-op TEE post-procedure.

Ejection fraction (EF) indicates the efficiency of the left ventricle (ability to pump blood sufficiently to the rest of the body). It compares the amount of blood in the left ventricle at the end of systole (when the ventricle is fuller) to the end of diastole (after the ventricle contracted and should be less full). Issues effecting the left ventricles pumping ability include preload (the amount of blood deposited into the ventricle prior to diastole), afterload (amount of pressure the ventricle has to pump against typically high as a result of elevated systemic venous pressure), ventricular hypertrophy (the enlargement of the ventricle which results in stretching of the ventricle causing decreased contractility and is a usually a result of congestive heart failure), and valvular insufficiency. Ejection fraction is typically reported in a percentage (1-99%) or described with words.

SEQ. #: 2582
Long Name: Ejection Fraction Post Procedure
Short Name: PPEF
Definition: Indicate the ejection fraction noted on TEE in the OR after Cardiopulmonary Bypass, prior to and closest to OR Exit.

Intent/Clarification: If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

If the the intra-op post TEE results, states "no change" from the intra-op pre-bypass TEE, then the pre-bypass values can be used.

Note: If no diagnostic report is in the medical record, a value documented in the medical record is acceptable.

Leave the field blank for documentation of improved EF.

Report of a reported range value, for example, a range of 55-60 is coded as 58%.

SEQ. #: 2606
Long Name: Planned Post Procedure PCI
Short Name: PPPlanedPCI
Definition: Indicate whether the procedure was followed by a planned PCI.

Intent/Clarification: Indicate if the patient returned to the Cath Lab any time after OR EXIT Time and before discharge for a percutaneous coronary intervention (PCI) that was planned prior to or during coronary, valve, or aorta surgery. To be considered “planned” this would need to be indicated in the Medical Provider’s preoperative /operative notes. At time of initial surgery if the surgeon determines that a vessel is not bypassable and more suitable for PCI then Seq 2606 can be coded as YES.

A percutaneous coronary intervention (PCI) is understood to be any procedure where entry to the vascular system is obtain thru percutaneous access (a needle poked thru the skin). A catheter is then inserted, and a guide wire is thru passed thru the vascular system to the heart. Dye is then injected, and pictures of the heart vessels are obtained as the dye flows thru via fluoroscopy (x-ray). An intervention is then performed to “open up” a vessel(s) if a blockage is recognized where dye flow was decreased. This can be done either thru angioplasty (a ballooning of the vessel to allow more blood to flow) or an angioplasty with stent placement (a ballooning of the vessel to allow more blood to pass followed by placement of a stent to help the vessel to remain open). Either “angioplasty” or “angioplasty with stent placement” should be captured here.

Coronary Bypass

SEQ. #: 2626
Long Name: Internal Mammary Artery Used
Short Name: IMAUsed
Definition: Indicate whether an internal mammary artery conduit was used

Intent/Clarification: To capture the use of an internal mammary artery (**also known as the internal thoracic artery**) to construct one or more distal anastomoses: LIMA, RIMA, both or none. IMA may be used as a free or in-situ graft; pedicle, skeletonized.

The patient must leave the OR with an IMA graft in place, in order to code Yes to IMA used. For example, the flow via the IMA graft was poor so the surgeon removed the IMA graft and used a venous graft to the LAD. In this scenario, the IMA was not used.

In situations where the surgeon uses an existing LIMA/RIMA, code Seq 2626 as Yes for IMA used, Seq 2627 / 2628 – leave blank unless you have the original operative note describing the technique.

SEQ. #: 2627
Long Name: Left IMA Used
Short Name: LeftIMA
Definition: Indicate whether the left internal mammary was used

Intent/Clarification: The left IMA was used to construct one or more anastomosis, pedicle or skeletonized.

- Yes, pedicle – Dissection of the IMA as a pedicle includes its surrounding fascia and blood and nerve supplies.
- Yes, skeletonized - Dissection of the IMA from its accompanying venous drainage, innervation, lymphatics, muscle, and fascia from the top of the first rib to its bifurcation with branches of the IMA clipped and divided.
- No / NA

When IMA is harvested as a pedicle graft proximally and skeletonized distally, code as skeletonized in this situation.

SEQ. #: 2628
Long Name: Right IMA Used
Short Name: RightIMA
Definition: Indicate whether the right internal mammary was used

Intent/Clarification: The right IMA was used to construct one or more anastomosis, pedicle or skeletonized.

- Yes, pedicle – Dissection of the IMA as a pedicle includes its surrounding fascia and blood and nerve supplies.
- Yes, skeletonized - Dissection of the IMA from its accompanying venous drainage, innervation, lymphatics, muscle, and fascia from the top of the first rib to its bifurcation with branches of the IMA clipped and divided.
- No / NA

When IMA is harvested as a pedicle graft proximally and skeletonized distally, code as skeletonized in this situation.

SEQ. #: 2629
Long Name: Reason for No IMA
Short Name: NoIMARsn
Definition: Indicate PRIMARY reason Internal Mammary artery was not used as documented in medical record.

Intent/Clarification: Choose from the following reasons:

- Subclavian stenosis
- Previous cardiac or thoracic surgery
- Previous mediastinal radiation
- Emergent or salvage procedure
- No (BYPASSABLE) LAD disease - This can include a non-stenosed or patent LAD, diffusely diseased LAD or other condition resulting in the LAD not being bypassed.
- Other - acceptable STS provided exclusion
- Other - not acceptable STS exclusion. The National Quality Forum (NQF) does not consider this exclusion for measure purposes and this choice will have a negative impact on the star rating.

Other - acceptable STS provided exclusion – This is an exclusion that has been adjudicated by Surgeon Leadership of STS and deemed to be acceptable. If you have a documented reason for not using the IMA that does not fall into one of the above approved reasons and it not addressed below, please send in a question to the FAQ Mailbox Ask an Abstraction Question . It is important for sites to keep a copy of the FAQ email documenting the exclusion in the event of an audit.

Examples of Acceptable Reasons:

The IMA was not harvested because the patient had a left upper extremity fistula for hemodialysis and the surgeon was concerned about coronary steal syndrome. Code this as 'Other – acceptable STS provided exclusion'

The patient has a history of severe PVD. The aortogram at the time of the cardiac catheterization showed an occluded distal aorta. The lower extremities perfusion was supplied by the mammary arteries. It was felt that the lower extremities would be in jeopardy if the mammary is used. Code this as an exclusion due to Other - acceptable STS provided exclusion.

A patient had a bilateral mastectomy and immediate reconstruction with flap. During that procedure both the RIMA and LIMA were harvested. 7 months later the patient required a CABG and no IMA could be used as they were not present. Code this as an exclusion due to previous thoracic surgery.

The patient has pectus carinatum and it is documented "We attempted to harvest the left internal mammary artery however due to the patient's severe pectus, it was impossible to visualize the mammary artery. Code this as an exclusion due to Other - acceptable STS provided exclusion.

Examples of Unacceptable Reasons:

I have had multiple cases where the IMA is not used but the physician places an SVG to the LAD. The cardiac cath shows no LAD disease but does have LM disease. The surgeon documents "I elected not to use IMA since the patient does not have any specific LAD disease". No LAD disease is not an acceptable exclusion in this situation. Left main is functionally 2 VD LAD and CX disease. Code OTHER not acceptable STS exclusion as reason for no IMA.

The patient has severe COPD and emphysema with hyperinflated lungs. He had a CABx1 with MVR. The surgeon chooses to use a vein instead of an IMA. This was his documentation in his consult note: "Has single-vessel coronary artery disease and I believe that he should have a vein graft to his LAD as given his large lungs a LIMA would be too hazardous. It simply will not reach." Code OTHER not acceptable STS exclusion as reason for no IMA.

IMA is not used related to poor or low blood flow. Code OTHER not acceptable STS exclusion as reason for no IMA.

SEQ.#: 2630
Long Name: Distal Anastomoses with Arterial Conduits
Short Name: DistAnastArtCond
Definition: Indicate if an anastomosis was placed which had a distal portion made of artery. This could be one arterial graft or a composite graft with the distal portion of the composite being arterial.

Intent/Clarification: The artery / arterial component of the graft is anastomosed to the coronary artery. **When part of the IMA was used as part of a composite graft, code 2626 yes as the internal mammary artery was used.** Composite grafts that include an IMA meet the NQF measure for IMA use.

SEQ. #: 2631
Long Name: Total Number of Distal Anastomoses with Arterial Conduits
Short Name: TotalNoDistAnastArtCond

Definition - Indicate the total number of arterial grafts (any graft where the distal portion is arterial).

Intent/Clarification: To collect the total number of distal anastomoses constructed using an artery. More than one anastomosis can be constructed from each artery. **Update August 2020 – Code the total number of distal anastomoses constructed using an artery to include IMA, radial, and other arterial conduits in this field.**

SEQ. #: 2633
Long Name: Distal Anastomoses with Radial Artery Conduit(s) Used
Short Name: RadialArtUsed
Definition: Indicate whether a radial artery conduit was used.

Intent/Clarification: The radial / radial artery component of the graft was used to construct one or more distal anastomosis.

SEQ. #: 2634
Long Name: Radial Dist Anast #
Short Name: NumRadDA
Definition: Indicate the total number of distal anastomoses done using radial artery grafts.

Intent/Clarification: To collect the total number of distal anastomoses constructed using a radial artery. More than one anastomosis can be constructed from each radial artery.

SEQ. #: 2636
Long Name: Radial Artery Harvest and Preparation Time
Short Name: RadHarvPrepTm
Definition: Indicate the total time for radial artery harvest and preparation.

Intent/Clarification: It is important to quantify the harvest and prep times to track resource utilization and provide objective data for RUC (Specialty Society Relative Value Scale Update Committee or Relative Value Update Committee, an American Medical Association group involved in health care pricing) surveys and coding. This is important because these values determine the rate at which Medicare and other payers reimburse for procedures.

The harvest time is the total time in minutes for harvest-from the time the skin incision is made until the artery is out. The preparation time is the the time needed to prepare the harvested graft, from removal until suitable for use.

SEQ. #: 2637
Long Name: Distal Anastomoses with Venous Conduit(s) Used
Short Name: VenousCondUsed
Definition: Indicate whether a venous conduit was used

Intent/Clarification:

The venous / venous component of the graft is anastomosed to the coronary artery. **When part of the IMA was used as part of a composite graft, code 2626 yes as the internal mammary artery was used.** Composite grafts that include an IMA meet the NQF measure for IMA use.

SEQ. #: 2638
Long Name: Total Number of Distal Anastomoses with Venous Conduits
Short Name: DistVein
Definition: Indicate the total number of distal anastomoses with venous conduits.

Intent/Clarification: Distal anastomosis refers to the connection between the bypass graft (conduit) and coronary artery. Record the total number of venous anastomoses constructed using a venous conduit connection to a coronary artery. More than one anastomosis can be constructed from a single vein. Saphenous veins are used as free grafts to bypass any coronary artery.

SEQ. #: 2640
Long Name: Saphenous Vein Harvest And Preparation Time
Short Name: SaphHarPrepTm
Definition: Indicate the total time for saphenous vein harvest and preparation.

Intent/Clarification: It is important to quantify the harvest and prep times to track resource utilization and provide objective data for RUC, (Specialty Society Relative Value Scale Update Committee or Relative Value Update Committee, an American Medical Association group involved in health care pricing) surveys and coding. This is important because these values determine the rate at which Medicare and other payers reimburse for procedures.

The harvest time is the total time in minutes for harvest-from the time the skin incision is made until the vein is out. The preparation time is the the time needed to prepare the harvested graft, from removal until suitable for use.

SEQ. #: 2710
Long Name: Proximal Technique
Short Name: ProxTech
Definition: Indicate the technique employed for proximal graft anastomosis.

Intent/Clarification: The intent is to determine various methods used to perform proximal anastomosis which may have an impact on the risk of stroke/ embolization from aortic intima. If more than one technique was used for proximal grafts, choose the highest level of occlusion used.

- Single Cross Clamp
- Partial Occlusion Clamp
- Anastomotic Assist Device – such as Cyclone, Enclose, Cardiac Passport, Heart String, etc.
- None - includes isolated in-situ mammary and patients who are under circ arrest during proximal graft anastomosis.

General Information Coronary Grid:

The order does not matter, include up to 10 grafts. One graft = one distal insertion. The number of grafts in the Grid should equal the number of distal insertions. For example, if the surgeon performed a CAB x4, there will be 4 grafts in the Grid. If the surgeon performs two grafts to a vessel, code the same vessel twice. For example, if a graft is placed to OM1 and OM2, code OM twice in the Grid.

We are no longer capturing if vein**/**arterial patch angioplasty was performed in the CABG Grid. Do not code and do not capture as Other Cardiac procedure.

If endarterectomy only (no graft) is performed on a coronary artery code ‘‘Yes’ to CAB done and leave proximal conduit, and distal position blank. Code None for distal position.

If the surgeon performs two grafts to a vessel, code the same vessel twice. For example, if a graft is placed to OM1 and OM2, code OM twice.

SEQ. #: 2730
Long Name: CAB Proximal Site 01
Short Name: CABProximalSite01
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification: Proximal end of graft (closest to heart)

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 2740
Long Name: CAB Distal Site 01
Short Name: CABDistSite01
Definition: Indicate distal insertion site of bypass.

Intent/Clarification: Distal end of graft (away from heart)

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)

- Acute Marginal (AM)
- ~~None~~ - This choice was entered in error

SEQ. #: 2750
Long Name: CAB Conduit 01
Short Name: CABConduit01
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

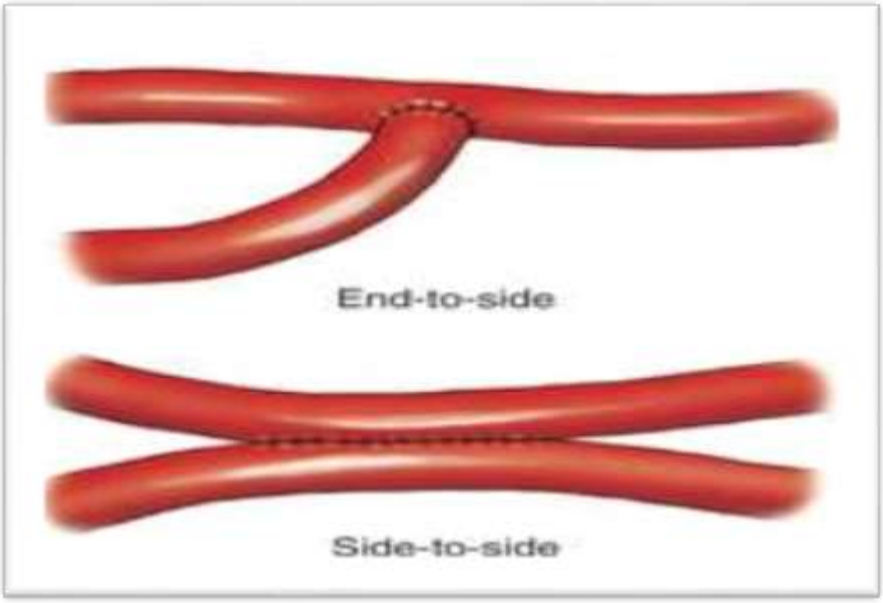
SEQ. #: 2755

Long Name: CAB Distal Position 01

Short Name: CABDistPos01
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel



SEQ. #: 2760

Long Name: CAB Endarterectomy 01
Short Name: CABEndArt01
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 2770
Long Name: CAB 02
Short Name: CAB02
Definition: Indicate whether a second Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 2790
Long Name: CAB Proximal Site 02
Short Name: CABProximalSite02
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 2800
Long Name: CAB Distal Site 02
Short Name: CABDistSite02
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex

- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 2810
Long Name: CAB Conduit 02
Short Name: CABConduit02
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 2815

Long Name: CAB Distal Position 02

Short Name: CABDistPos02
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 2820

Long Name: CAB Endarterectomy 02
Short Name: CABEndArt02
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 2830

Long Name: CAB 03
Short Name: CAB03
Definition: Indicate whether a third Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 2850
Long Name: CAB Proximal Site 03
Short Name: CABProximalSite023
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 2860
Long Name: CAB Distal Site 03
Short Name: CABDistSite03
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 2870
Long Name: CAB Conduit 03

Short Name: CABConduit03
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 2875

Long Name: CAB Distal Position 03

Short Name: CABDistPos03
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 2880

Long Name: CAB Endarterectomy 03
Short Name: CABEndArt03
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 2890
Long Name: CAB 04
Short Name: CAB04
Definition: Indicate whether a fourth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 2910
Long Name: CAB Proximal Site 04
Short Name: CABProximalSite04
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 2920
Long Name: CAB Distal Site 04
Short Name: CABDistSite04
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 2930
Long Name: CAB Conduit 04
Short Name: CABConduit04
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 2935

Long Name: CAB Distal Position 04

Short Name: CABDistPos04
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 2940

Long Name: CAB Endarterectomy 04
Short Name: CABEndArt04
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 2950
Long Name: CAB 05
Short Name: CAB05
Definition: Indicate whether a fifth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 2970
Long Name: CAB Proximal Site 05
Short Name: CABProximalSite05
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 2980
Long Name: CAB Distal Site 05
Short Name: CABDistSite05
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 2990
Long Name: CAB Conduit 05
Short Name: CABConduit05
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 2995

Long Name: CAB Distal Position 05

Short Name: CABDistPos05
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3000

Long Name: CAB Endarterectomy 05
Short Name: CABEndArt05
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 3010
Long Name: CAB 06
Short Name: CAB06
Definition: Indicate whether a sixth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 3030
Long Name: CAB Proximal Site 06
Short Name: CABProximalSite06
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 3040
Long Name: CAB Distal Site 06
Short Name: CABDistSite06
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex

- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 3050
Long Name: CAB Conduit 06
Short Name: CABConduit06
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 3055

Long Name: CAB Distal Position 06

Short Name: CABDistPos06
Definition: Indicate anastomotic position.

Intent/Clarification:
- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3060

Long Name: CAB Endarterectomy 06
Short Name: CABEndArt06
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 3070
Long Name: CAB 07
Short Name: CAB07
Definition: Indicate whether a seventh Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 3090
Long Name: CAB Proximal Site 07
Short Name: CABProximalSite07
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 3100
Long Name: CAB Distal Site 07
Short Name: CABDistSite07
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 3110
Long Name: CAB Conduit 07
Short Name: CABConduit07
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 3115

Long Name: CAB Distal Position 07

Short Name: CABDistPos07
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3120

Long Name: CAB Endarterectomy 07
Short Name: CABEndArt07
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 3130
Long Name: CAB 08
Short Name: CAB08
Definition: Indicate whether an eighth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 3150
Long Name: CAB Proximal Site 08

Short Name: CABProximalSite08
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 3160
Long Name: CAB Distal Site 08
Short Name: CABDistSite08
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 3170
Long Name: CAB Conduit 08
Short Name: CABConduit08
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 3175

Long Name: CAB Distal Position 08

Short Name: CABDistPos08
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3180

Long Name: CAB Endarterectomy 08
Short Name: CABEndArt08
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 3190
Long Name: CAB 09
Short Name: CAB09
Definition: Indicate whether a ninth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 3210
Long Name: CAB Proximal Site 09
Short Name: CABProximalSite09
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 3220

Long Name: CAB Distal Site 09
Short Name: CABDistSite09
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)
- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 3230
Long Name: CAB Conduit 09
Short Name: CABConduit09
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 3235

Long Name: CAB Distal Position 09

Short Name: CABDistPos09
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3240

Long Name: CAB Endarterectomy 09
Short Name: CABEndArt09
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

SEQ. #: 3250
Long Name: CAB 10
Short Name: CAB10
Definition: Indicate whether a tenth Coronary Artery Bypass graft was done.

Intent/Clarification:

- Yes, Additional Grafts done
- No Additional Grafts

SEQ. #: 3270
Long Name: CAB Proximal Site 10
Short Name: CABProximalSite10
Definition: Indicate proximal site of the bypass graft.

Intent/Clarification:

- Aorta
- T graft off artery
- T graft off vein
- In-situ IMA
- Other

SEQ. #: 3280
Long Name: CAB Distal Site 10
Short Name: CABDistSite10
Definition: Indicate distal insertion site of bypass.

Intent/Clarification:

- Left Main Coronary Artery (LMCA)
- LAD
- Diagonal
- Ramus Intermedius
- Circumflex
- Obtuse Marginal
- RCA
- Posterior Descending (PDA)

- Posterolateral (PLB)
- Acute Marginal (AM)
- None

SEQ. #: 3290
Long Name: CAB Conduit 10
Short Name: CABConduit10
Definition: Indicate the conduit type used.

Intent/Clarification:

- In-situ IMA
- Free IMA
- Vein
- Radial artery
- Other

SEQ. #: 3295

Long Name: CAB Distal Position 10

Short Name: CABDistPos10
Definition: Indicate anastomotic position.

Intent/Clarification:

- **Side to Side** (**Sequential**): sometimes called a jump graft, the side of the graft is inserted into the side of the target vessel and the end of the graft is inserted elsewhere on that vessel or on another target vessel.
- **End to Side** the end of the graft is inserted into the side of the target vessel

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SEQ. #: 3300

Long Name: CAB Endarterectomy 10
Short Name: CABEndArt10
Definition: Indicate whether endarterectomy was performed.

Intent/Clarification: Endarterectomy is a surgical procedure to remove the atheromatous plaque material, or blockage, in the lining of an artery constricted by the buildup of soft/hardening deposits. It is carried out by separating (peeling) the plaque from the arterial wall.

Valve Surgery

General Information Valve Prosthesis Explant:

The intent is to capture as much information as possible about explanted devices. This will assist with post market device surveillance and provide information on device longevity. Having this information will help surgeons and patients make informed decisions on device selection.

Code the valve explant even if the sewing cuff is retained.

Do not code a valve explant if a valve is implanted and explanted during the same operation due to the fact the valve did not work or fit.

SEQ. #: 3315
Long Name: First Valve Prosthesis Explant Position
Short Name: ValExpPos
Definition: Indicate the location of the first explanted prosthetic valve or annuloplasty device.

Intent/Clarification:

- Aortic
- Mitral
- Tricuspid
- Pulmonic

SEQ. #: 3320
Long Name: First Valve Explant Type
Short Name: ValExpTyp
Definition: Indicate the first type of valve device explanted or enter unknown.

Intent/Clarification: Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website.

- Mechanical
- Bioprosthetic
- Homograft - A graft of tissue taken from a donor of the same species as the recipient.
- Autograft - A tissue or organ that is transplanted from one part to another of the same body
- Annuloplasty
- Leaflet Clip
- Transcatheter Valve
- Transcatheter Valve in Valve with prosthetic valve
- Other
- Unknown

SEQ. #: 3325
Long Name: First Valve Explant Etiology
Short Name: ValExpEt
Definition: Indicate the primary reason for explanting valve device.

Intent/Clarification: Choose the most critical reason that the patient is having the valve explanted.

- Endocarditis
- Failed repair
- Hemolysis - Valve causes destruction of red blood cells.
- Incompetence
- Pannus - Mobility of the leaflets obstructed or impaired by a membrane of tissue.
- Para-valvular leak - Leak around the valve
- Prosthetic deterioration
- Sizing/positioning issue - Valve size or position is suboptimal
- Stenosis
- Thrombus
- Other
- Unknown

When coding the replacement of a calcified homograft code prosthetic deterioration.

Note: Patient had previous Ross procedure with Pulmonary Autograft implanted in Aortic Position, with reconstruction of aortic annulus with reduction annuloplasty and reconstruction of RVOT. He now has aneurysmal dilation of the ascending aorta and returns for AVR + Aortic Root Reconstruction and replacement of the ascending aorta. Code the explant etiology other.

SEQ. #: 3330
Long Name: First Valve Explant Device Known
Short Name: ValExpDevKnown
Definition: Indicate whether the type of explanted valve device is known.

Intent/Clarification: Information is available to identify the explanted valve device. This may include the patient's device card from the manufacturer.

Note: When the patient has had a Ross procedure and then presents for reoperation, code no to device known for the explant of the AV conduit.

SEQ. #: 3335
Long Name: First Valve Explant Device
Short Name: ValExpDev
Definition: Indicate the model number of the first prosthesis explanted.

Intent/Clarification: Choose the device type from the device list.

SEQ. #: 3340
Long Name: First Valve Explant Unique Device Identifier (UDI)
Short Name: ValExpUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ #: 3341
Long Name: First Valve Explant Device Year Known
Short Name: ValExpYrKn
Definition: Indicate if the year of implant is known for the device being explanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3342
Long Name: First Valve Explant Implant Year
Short Name: ValExpYr
Definition: Indicate the year of implant for the device being explanted.

Intent/Clarification: If the year of the implant is documented in a range, capture the year closest to surgery. For example, if the date of the implant is documented as being 10-15 years ago, capture as 10 years**.** Leave Blank if you have no information on the month, day, or year of the implant.

SEQ. #: 3350

Long Name: Second Valve Prosthesis Explant

Short Name: ValExp2
Definition: Indicate whether a second prosthetic valve or annuloplasty was explanted during this procedure.

Intent/Clarification: If more than one device is explanted, capture both. Code the valve explanted even if the sewing cuff is retained. Do not code a valve explant if a valve is implanted and explanted during the same operation due to the fact the valve did not work or fit.

SEQ. #: 3355
Long Name: Second Valve Prosthesis Explant Position
Short Name: ValExpPos2
Definition: Indicate the location of the second explanted prosthetic valve or annuloplasty.

Intent/Clarification:

- Aortic
- Mitral
- Tricuspid
- Pulmonic

SEQ. #: 3360

Long Name: Second Valve Explant Type
Short Name: ValExpTyp2
Definition: Indicate the second type of valve device explanted or enter unknown.

Intent/Clarification: Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website.

- Mechanical
- Bioprosthetic
- Homograft - A graft of tissue taken from a donor of the same species as the recipient.

- Autograft - A tissue or organ that is transplanted from one part to another of the same body
- Annuloplasty
- Leaflet Clip
- Transcatheter Valve
- Transcatheter Valve in Valve with prosthetic valve
- Other
- Unknown

SEQ. #: 3365
Long Name: Second Valve Explant Etiology
Short Name: ValExpEt2
Definition: Indicate the primary reason for explanting valve device.

Intent/Clarification: Choose the most critical reason that the patient had their valve replaced.

- Endocarditis
- Failed repair
- Hemolysis - Valve causes destruction of red blood cells.
- Incompetence
- Pannus - Mobility of the leaflets obstructed or impaired by a membrane of tissue.
- Para-valvular leak - Leak around the valve
- Prosthetic deterioration
- Sizing/positioning issue - Valve size or position is suboptimal
- Stenosis
- Thrombus
- Other
- Unknown

Note: Patient had previous Ross procedure with Pulmonary Autograft implanted in Aortic Position, with reconstruction of aortic annulus with reduction annuloplasty and reconstruction of RVOT. He now has aneurysmal dilation of the ascending aorta and returns for AVR + Aortic Root Reconstruction and replacement of the ascending aorta. Code the explant etiology other.

SEQ. #: 3370

Long Name: Second Valve Explant Device Known
Short Name: ValExpDevKnown2
Definition: Indicate whether the type of explanted valve device is known.

Intent/Clarification: Information is available to identify the explanted valve device.

Note: When the patient has had a Ross procedure and then presents for reoperation, code no to device known for the explant of the AV conduit.

SEQ. #: 3375
Long Name: Second Valve Explant Device
Short Name: ValExpDev2
Definition: Indicate the model number of the second prosthesis explanted.

Intent/Clarification: Choose the device type from the device list.

SEQ. #: 3380
Long Name: Second Valve Explant Device Unique Device Identifier (UDI)
Short Name: ValExpDevUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

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https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3381
Long Name: Second Valve Explant Device Year Known
Short Name: ValExp2YrKn
Definition: Indicate if the year of implant is known for the device being explanted.

Intent/Clarification:

- Yes

- No

SEQ. #: 3382
Long Name: Second Valve Explant Implant Year
Short Name: ValExp2ImplantYr
Definition: Indicate the year of implant for the device being explanted.

Intent/Clarification: If the year of the implant is documented in a range, capture the closest year to surgery. For example, if the date of the implant is documented as being 10-15 years ago, capture as 10 years**.**

SEQ. #: 3385

Long Name: Third Valve Prosthesis Explant

Short Name: ValExp3

Definition: Indicate whether a third prosthetic valve or annuloplasty was explanted during this procedure.

Intent/Clarification: If more than one device is explanted, capture both. Code the valve explanted even if the sewing cuff is retained. Do not code a valve explant if a valve is implanted and explanted during the same operation due to the fact the valve did not work or fit.

SEQ. #: 3386
Long Name: Third Valve Prosthesis Explant Position
Short Name: ValExpPos3
Definition: Indicate the location of the second explanted prosthetic valve or annuloplasty.

Intent/Clarification:

- Aortic
- Mitral
- Tricuspid
- Pulmonic

SEQ. #: 3387

Long Name: Third Valve Explant Type
Short Name: ValExpTyp3
Definition: Indicate the third type of valve device explanted or enter unknown.

Intent/Clarification: Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website.

- Mechanical
- Bioprosthetic
- Homograft - A graft of tissue taken from a donor of the same species as the recipient.
- Autograft - A tissue or organ that is transplanted from one part to another of the same body
- Annuloplasty
- Leaflet Clip
- Transcatheter Valve
- Transcatheter Valve in Valve with prosthetic valve
- Other
- Unknown

SEQ. #: 3388
Long Name: Third Valve Explant Etiology
Short Name: ValExpEt3
Definition: Indicate the primary reason for explanting valve device.

Intent/Clarification: Choose the most critical reason that the patient had their valve replaced.

- Endocarditis
- Failed repair
- Hemolysis - Valve causes destruction of red blood cells.
- Incompetence
- Pannus - Mobility of the leaflets obstructed or impaired by a membrane of tissue.
- Para-valvular leak - Leak around the valve
- Prosthetic deterioration
- Sizing/positioning issue - Valve size or position is suboptimal
- Stenosis
- Thrombus
- Other
- Unknown

Note: Patient had previous Ross procedure with Pulmonary Autograft implanted in Aortic Position, with reconstruction of aortic annulus with reduction annuloplasty and reconstruction of RVOT. He now has aneurysmal dilation of the ascending aorta and returns for AVR + Aortic Root Reconstruction and replacement of the ascending aorta. Code the explant etiology other.

SEQ. #: 3389

Long Name: Third Valve Explant Device Known

Short Name: ValExpDevKnown3
Definition: Indicate whether the type of explanted valve device is known.

Intent/Clarification: Information is available to identify the explanted valve device.

Note: When the patient has had a Ross procedure and then presents for reoperation, code no to device known for the explant of the AV conduit.

SEQ. #: 3390
Long Name: Third Valve Explant Device
Short Name: ValExpDev3
Definition: Indicate the model number of the second prosthesis explanted.

Intent/Clarification: Choose the device type from the device list.

SEQ. #: 3391
Long Name: Third Valve Explant Device Unique Device Identifier (UDI)
Short Name: ValExpDevUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

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SEQ. #: 3392
Long Name: Third Valve Explant Device Year Known
Short Name: ValExp3YrKn
Definition - Indicate if the year of implant is known for the device being explanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3393
Long Name: Third Valve Explant Implant Year
Short Name: ValExp3ImplantYr
Definition - Indicate the year of implant for the device being explanted.

Intent/Clarification: If the year of the implant is documented in a range, capture the closest year to surgery. For example, if the date of the implant is documented as being 10-15 years ago, capture as 10 years**.**

SEQ. #: 3395
Long Name: VS-Aortic Valve Procedure
Short Name: VSAVPr
Definition: Indicate the type of procedure that was performed on the aortic valve.

Intent/Clarification:

- Replacement
- Repair / Reconstruction
- Surgical Prosthetic Valve Intervention (Not explant of valve)

Anterior mitral leaflet endarterectomy/decalcification is considered part of the AVR and should not be coded as a mitral valve procedure.

An aortic endarterectomy is considered part of the AVR procedure and should not be coded elsewhere.

Aortoplasty done in conjunction with AVR to reduce the size of the ascending aorta is considered part of the closure and is not coded as an additional procedure.
Aortic resection to merely remove excessive aortic tissue prior to aortoplasty is considered part of the closure and is not coded as an additional procedure.

Wrapping the dilated portion of the aorta to reinforce it does not constitute an "other or aorta" procedure when done in conjunction with an AVR.

Note: Patient had an AVR for endocarditis. The surgeon also performed unroofing of the mitral valve sub annular abscess. Don't code the unroofing of the mitral valve sub annular abscess. This is part of the AVR for endocarditis.

Update Oct 2020 – Left Main endarterectomy done in conjunction with an AVR is considered part of the AVR procedure and should not be coded elsewhere.

SEQ. #: 3400

Long Name: VS-Aortic Transcatheter Valve Replacement
Short Name: VSTCV
Definition: Indicate whether the aortic valve replacement was done using a transcatheter valve device.

Intent/Clarification: Transcatheter Aortic Valve Replacement (TAVR) technology is designed to patients, who may not be candidates for conventional open-heart valve replacement surgery, to obtain a life-saving valve. Catheter based access is obtained through an artery.
Transcatheter devices inserted via an open approach are captured as a surgical AVR. This field is for transcatheter devices inserted via transcatheter.

If you participate in the TVT registry you may opt to submit transcatheter cases to the STS adult cardiac surgery registry in addition to the TVT registry, but it is not required. TVT cases are not analyzed.

Note: Both TAVR + TMVR done during same operative episode. This is an optional case for ACSD. Double valve should be entered if the site enters TAVR/TMVR cases into the ACSD. It will not be analyzed.

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. Use the OR times from the open procedure.

Note: While undergoing TAVR procedure, surgery was converted to open AVR. If the site usually enters TAVRs into the STS database and the patient ends up converting to SAVR(surgical AVR) then the TAVR should not be captured as the index procedure, the SAVR (surgical AVR) should be entered as the index procedure and the preoperative risk of the failed TAVR should be captured.

SEQ. #: 3401
Long Name: VS-Transcatheter Valve Replacement Approach
Short Name: VSTCVR
Definition: Indicate transcatheter valve replacement approach.

Intent/Clarification: TAVR devices may be implanted via multiple vascular approaches:

- Transapical
- Transaxillary
- Transfemoral
- Transaortic
- Subclavian
- Transiliac
- Transeptal
- Transcarotid

- Transcaval
- Other

SEQ. #: 3402
Long Name: VS-Aortic Surgical Valve Replacement
Short Name: VSAVSurgRep
Definition: Indicate whether the aortic valve replacement was done using a surgical procedure.

Intent/Clarification: An open surgical valve procedure was performed.

Anterior mitral leaflet endarterectomy/decalcification is considered part of the AVR and should not be coded as a mitral valve procedure.

An aortic endarterectomy is considered part of the AVR procedure and should not be coded elsewhere.

Aortoplasty done in conjunction with AVR to reduce the size of the ascending aorta is considered part of the closure and is not coded as an additional procedure.

Aortic resection to merely remove excessive aortic tissue prior to aortoplasty is considered part of the closure and is not coded as an additional procedure.

Wrapping the dilated portion of the aorta to reinforce it does not constitute an "other or aorta" procedure when done in conjunction with an AVR.

Note: Patient had an AVR for endocarditis. The surgeon also performed unroofing of the mitral valve sub annular abscess. Don't code the unroofing of the mitral valve sub annular abscess. This is part of the AVR for endocarditis.

SEQ. #: 3403
Long Name: VS-Aortic Surgical Valve Replacement Device Type
Short Name: VSAVSurgType
Definition: Indicate the type of device used to surgically replace the aortic valve.

Intent/Clarification: Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website. Choose the device type:

- Mechanical
- Bioprosthetic
- Surgeon fashioned pericardium (Ozaki)
- Other

SEQ. #: 3404
Long Name: VS-Aortic Surgical Bioprosthetic Replacement Valve Type
Short Name: VSAVSurgBioT

Definition: Indicate the type of bioprosthetic device used to surgically replace the aortic valve.

Intent/Clarification: If bioprosthetic, choose valve type:

- Stented
- Stentless subcoronary valve only
- Sutureless/rapid deployment

SEQ. #: 3424
Long Name: VS-Aortic Valve Procedure Repair Type
Short Name: AVProcRepType
Definition - Indicate the repair type of the aortic valve. If more than one repair type was performed, select all that apply.

Intent/Clarification:

- Commissural suture annuloplasty - Sometimes referred to as “subcommissural annuloplasty”. Identifies repairs involving placement of pledgeted mattress sutures across the upper portion of the commissural post to improve leaflet coaptation. These annuloplasty sutures are contained with the inside of the aorta, in contrast to the sutures for commissural resuspension.

- Leaflet plication - Repair with central plication stitches, shortening the leaflet free-edge length for the correction of leaflet prolapse. Code free margin shortening as leaflet plication.

- Leaflet commissural resuspension suture - A commissural resuspension suture is a plegeted mattress suture placed at the top end of the commissural post. The stitch is placed transmurally, so that one pledget is on the inside of the aorta and the other pledget is on the outside of the aorta. This suture has the effect of compressing all aortic layers together and is often used in repair of aortic dissections. ***Note: If this procedure is performed in conjunction with valve sparing root procedure Seq 4968, both leaflet commissural resuspension suture and valve sparing root procedure should be captured.*** **Update August 2020 - Leaflet commissural resuspension suture with replacement of the ascending aorta is not captured as a valve sparing root procedure in SEQ 4968. It is captured in SEQ 4958.**

- Leaflet free edge reinforcement - The free edge reinforcement technique is performed by using suture passed in running fashion over and over along the entire length of the free margin. May include reinforcement (PTFE) suture.

- External suture annuloplasty - To identify placement of the annuloplasty suture outside the right/left commissure, passing the needle through the septal myocardium.

- Nodular release - Repair procedure included nodular release.

- Leaflet shaving - Leaflet shaving removing a growth

- Leaflet debridement - A debridement technique can be used to remove small

leaflet lesions such as Lambl's excrescence, fibroelastomas and small calcific deposits. When tumors such as fibroelastoma or myxoma are removed, also code in seq # 4115.

- Ring annuloplasty external ring - Describes a ring sewn around the base to the annulus to reshape it and provide support. Rings may be flexible or rigid.

- Pannus/thrombus removal (Native Valve) – the aortic repair included pannus or thrombus removal. Pannus is the ingrowth of fibrous tissue into the valve apparatus**. Update Oct 2020 – may also include removal of vegetation.**

- Leaflet resection suture - Sutures places to mark the edges of the resection.

- Leaflet pericardial patch - A pericardial patch can be used to repair larger perforations in the valve leaflets

- Division of fused leaflet raphe **-** The division of the raphe. For example, the two commissures or hinge points that are fused in bicuspid valves.

- Ring annuloplasty internal ring - New type of **annuloplasty ring** is that is tailored to each valve's shape and is designed to be implanted directly into the aortic annulus. The HAART 300 is an example of an internal ring.

SEQ. #: 3425
Long Name: VS-Aortic Valve Procedure Surgical Prosthetic Valve Intervention
Short Name: AVSurgProsthValInt
Definition - Indicate if a procedure was performed on a previously implanted prosthetic valve. If more than one intervention was performed, select all that apply.

Intent/Clarification: This field is not for an explant of valve.

- Repair of periprosthetic leak - Repair of a periprosthetic leak with one or more repair sutures without needing to remove the existing prosthesis.
- Removal of pannus - **Pannus** removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- Removal of clot - Clot or thrombus removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- Other

Repair of a periprosthetic leak done via transcatheter device is not entered into the ACSD.

SEQ. #: 3460
Long Name: VS-Aortic Proc-Aortic Annular Enlargement
Short Name: AnlrEnl
Definition: Indicate whether an annular enlargement procedure was performed on the Aortic Valve.

Intent/Clarification:
Enlargement of the aortic annulus during aortic valve replacement permits insertion of a larger prosthetic valve or allows for optimal positioning. The enlarging procedure

typically employs a patch of either pericardium or Dacron. In the classic Nick's or Manougian, the patch extends across the annulus (an aorto-annuloplasty). A patch that extends down to but not across the actual annulus (supra-annular aortoplasty) is considered a modification of the Nick's or Manougian and is coded as Nick's or Manougian, as appropriate. An aortic annular enlargement is defined as incision of the aortic annulus to enlarge the aortic orifice. Annular enlargement techniques include, but are not limited to Manougian, Konno and Nicks.

SEQ. #: 3461
Long Name: VS-Aortic Proc-Aortic Annular Enlargement - Technique
Short Name: AnlrEnlTech
Definition: Indicate the technique used for the aortic annular enlargement procedure.

Intent/Clarification:
Intended to capture whether a Nicks-Nunez, Manougian, Konno, Other or Unknown was performed utilizing patch material.

- Nicks-Nunez - Posterior approach for enlargement of the aortic annulus. The aortotomy is extended either through the non-coronary sinus, across the aortic ring as far as the origin of the mitral valve or by resecting the posterior commissure (between left and non-coronary cusps), stopping at the base of the base of the anterior mitral leaflet. The incision can be extended across the fibrous mitral annulus, further into the anterior mitral leaflet.

- Manougian - The aortotomy is extended into the commissure between the left and non-coronary sinuses and into the anterior mitral leaflet.

- Konno - The aortic annulus is enlarged by implantation of a patch into the incised ventricular septum. Another patch is used to close the right ventricular incision. Konno-Rastan's should be captured as a Konno procedure.

- Other

- Unknown

Do not code Aortic Root Procedure when the surgeon performs only an annular enlargement with no other aortic root procedure.

SEQ. #:3471
Long Name: VS – Replacement of non-coronary sinus (Modified Wheat/ Modified Yacoub)
Short Name: AVReplNonCorSin
Definition - Indicate if a replacement of a non-coronary sinus was performed. This includes modified Wheat and modified Yacoub procedures.

Intent/Clarification: Modified Yacoub refers to the strategy whereby 1 to 3 sinuses are excised (most commonly 1 sinus—the noncoronary sinus), and the tongues of the ascending aortic prosthesis are sewn to the native aortic wall.

SEQ. #: 3472
Long Name: VS-Aortic Valve or Valve Repair Device Implant
Short Name: AorticImplant
Definition: Indicate whether an aortic valve or valve repair device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3480
Long Name: VS-Aortic Proc-Implant Model Number
Short Name: VSAoIm
Definition: Indicate the name of the prosthesis implanted. The names provided include the manufacturer's model number with "xx" substituting for the device size.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices. Entering the UDI will allow for valve identification.

SEQ. #: 3485
Long Name: VS-Aortic Proc-Imp-Size
Short Name: VSAoImSz
Definition: Indicate the aortic implant size.

Intent/Clarification: ON-X valves with sizes such as 27/29 are coded as a 27.

The Perceval Sutureless Valve comes in 4 sizes, S, M, L, XL. Code the size of the last digits in the model number. For example, PSV23 will be coded as 23.

REF	SIZE	AORTIC ANNULUS DIAMETER [A] (mm)	SINOTUBULAR JUNCTION DIAMETER [≤ 1.3 A] (mm)
PVS21	S	19-21	≤ 24.7-27.3
PVS23	M	21-23	≤ 27.3-29.9
PVS25	L	23-25	≤ 29.9-32.5
PVS27	XL	25-27	≤ 32.5-35.1

Table 1: Patient anatomical characteristics

Figure 1 REF = Model Number

SEQ. #: 3490
Long Name: VS-Aortic Proc-Imp - Unique Device Identifier (UDI)
Short Name: VSAoImUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification:

This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3500
Long Name: VS-Mitral Valve Procedure
Short Name: VSMVPr
Definition: Indicate the type of procedure that was performed on the mitral valve.

Intent/Clarification:

- Repair
- Replacement
- Surgical Prosthetic Valve Intervention (Not explant of valve)

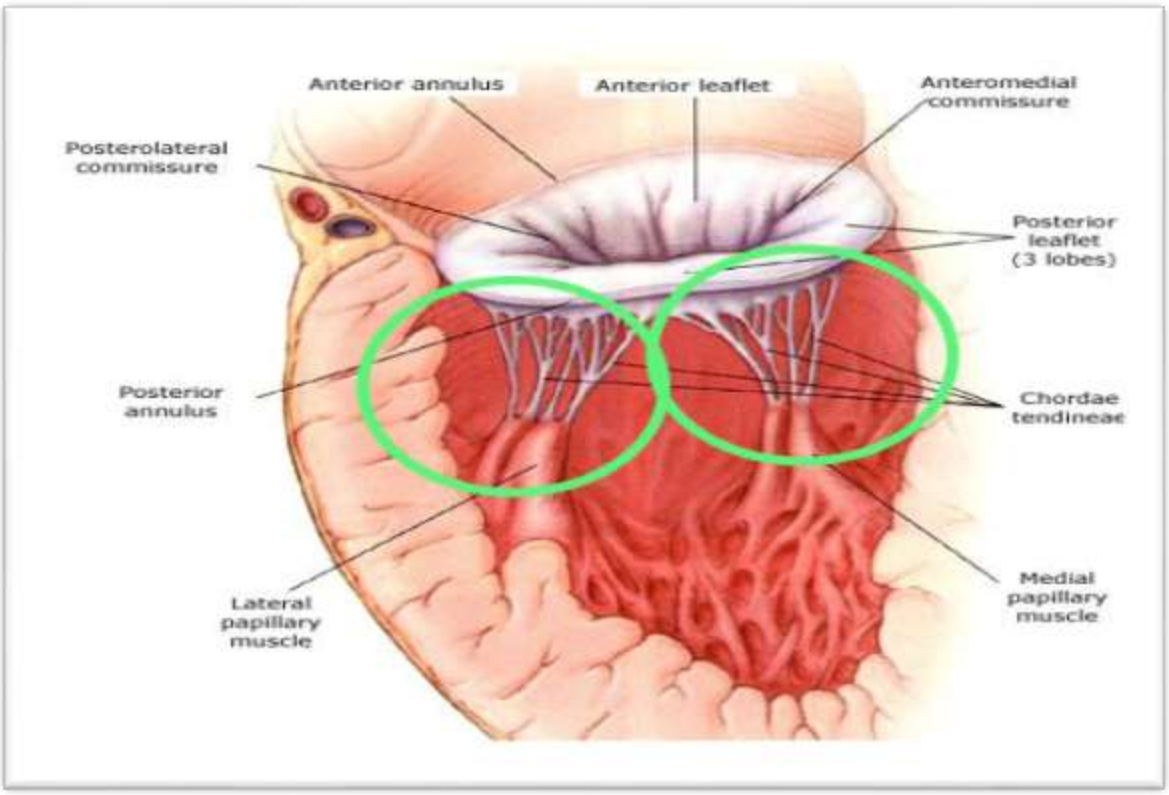

Figure 2Mitral Valve

General Information

An anterior mitral leaflet endarterectomy/decalcification done in conjunction with an AVR is considered part of the AVR and should not be coded as a mitral valve procedure.

Unroofing of the mitral valve sub annular abscess done in conjunction with an AVR for endocarditis is considered part of the AVR and should not be coded as a mitral valve procedure.

An MVR with reconstruction of the atrium with atrioplasty is a technical addition and is coded only as an MVR.

A pericardial patch for erosion of an abscess is an inherent part of the procedure for an MVR for endocarditis and is not coded as other cardiac procedure.

SEQ. #: 3501
Long Name: VS - Mitral Valve Repair – Repair Approach
Short Name: VSMVRepAppSurg
Definition: Indicate the approach that was used to repair the mitral valve.

Intent/Clarification:

- Transcatheter - Transcatheter Mitral Valve Replacement (TMVR) and Mitral Clip procedures are performed on patients, who may not be candidates for conventional open-heart valve replacement or repair surgery. Catheter based access is obtained through an artery.

- Surgical – Repair is performed via open surgical technique or minimally invasive mitral valve surgery, where small incisions are made through the chest. If a transcatheter device is inserted via an open procedure capture as surgical repair.

If you participate in the TVT registry you may opt to submit transcatheter cases to the STS adult cardiac surgery registry in addition to the TVT registry, but it is not required.

SEQ. #: 3502
Long Name: VS - Mitral Valve Repair - Surgical Approach
Short Name: VSMVRepAppSurg
Definition: Indicate the type of repair to the mitral valve. If more than one repair type was performed, select all that apply.

Intent/Clarification:

- Annuloplasty - The mitral valve repair procedure included an annuloplasty. Includes Kay annuloplasty

- Annular decalcification/debridement - The mitral valve repair procedure included an annular decalcification / debridement.

- Mitral commissurotomy -The mitral valve repair procedure included a mitral commissurotomy. Disruption of the components of a commissure fused as a result of valvular disease. Includes Mitral Repair Leaflet - Commissure Resection.

- Leaflet resection - The mitral valve repair procedure included a leaflet resection.

- Leaflet extension/replacement patch- The mitral valve repair procedure included a leaflet extension / replacement / patch.

- Mitral commissuroplasty- The mitral valve repair procedure included a mitral commissuroplasty.

- Neochords (PTFE) - The mitral valve repair procedure included neochords (PTFE). Intended to replace damaged chordae by delivering artificial chordae tendineae.

- Edge to edge repair - The mitral valve repair procedure included an edge to edge repair. Edge-to-edge repair is a surgical approximation of the mitral valve leaflets, sometimes called the Alfieri procedure or Bow Tie procedure.

- Mitral cleft repair (scallop closure) - Mitral valve repair procedure included a mitral cleft repair.

- Chordal Transfer - The mitral valve repair procedure included a chordal / leaflet transfer.

- Leaflet Plication – The mitral valve repair procedure included a leaflet plication.

- Pannus/Thrombus Removal (Native Valve) - The mitral repair included pannus or thrombus removal. Pannus is the ingrowth of fibrous tissue into the valve apparatus. **Update Oct 2020 – may also include removal of vegetation.**

SEQ. #: 3503
Long Name: VS - Mitral Valve Resection Location
Short Name: VSMVResLoc
Definition - If a leaflet resection was performed on the mitral valve, choose the resection location(s).

Intent/Clarification:
- **Anterior Resection -** anterior MV leaflet resection was performed
- **Posterior Resection -** posterior MV leaflet resection was performed
- **Both –** anterior and posterior MV leaflet resection was performed

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SEQ. #: 3510
Long Name: VS-Mitral Leaflet Resection Methods
Short Name: VSLeafResTypMult
Definition: Indicate the type of resection method used. If more than one method was used, select all that apply.

Intent/Clarification:
- Triangular Alone
- Quadrangular Alone
- Resection with Sliding Valvuloplasty – leaflet resection with a sliding plasty.
- Resection with Folding Valvuloplasty – leaflet resection with a folding plasty.
- Other

SEQ. #: 3511
Long Name: VS - Mitral Valve Surgery Neochords Location
Short Name: VSNeochordLoc
Definition - If neochords were included in the repair approach, choose the neochord location(s).

Intent/Clarification:
- **Anterior -** anterior neochords were placed
- **Posterior -** posterior neochords were placed
- **Both –** anterior and posterior neochords were placed
- **Not Documented**

SEQ. #: 3512
Long Name: Valve Surgery - Mitral Valve Chordal Transfer Location
Short Name: VSChordalTransLoc
Definition: If chordal transfer occurred, choose the chordal transfer location(s).

Intent/Clarification:

- **Anterior Chordal transfer -** chordal leaflet transfer was anterior
- **Posterior Chordal transfer -** chordal leaflet transfer was posterior
- **Not documented**

SEQ. #: 3513
Long Name: VS-Mitral Valve Repair - Leaflet Extension / Replacement Patch - Location
Short Name: VSMitRLeafERPLoc
Definition: Indicate the location of the mitral leaflet extension/replacement patch.

Intent/Clarification:

- **Anterior**
- **Posterior**
- **Both**
- **Not Documented**

SEQ. #: 3600
Long Name: VS-Mitral Repair Attempted
Short Name: MitralIntent
Definition: Indicate whether a Mitral Valve Repair was attempted prior to the Mitral Valve Replacement.

Intent/Clarification:

- Yes
- No

SEQ. #: 3605
Long Name: VS-Mitral Chordal Preservation
Short Name: VSChorPres
Definition: Indicate whether native chords were preserved.

Intent/Clarification:

- Anterior
- Posterior
- Both
- None

If artificial chords from each papillary muscle to the annulus were placed during an MVR**,** code Yes to chords preserved. The STS realizes that native chords are ideal, however, given the current limitations in this version it is believed this is the best way to signify the presence of artificial chords.

If the anterior leaflet is removed and it is not specified that the anterior chords were preserved, and if the posterior leaflet is left intact then it should be recorded as posterior preservation only. This is the most common scenario.

SEQ. #: 3610

Long Name: VS-Mitral Transcatheter Valve Replacement
Short Name: VSTCVMit
Definition: Indicate whether the mitral valve replacement was done using a transcatheter valve device.

Intent/Clarification: Transcatheter Mitral Valve Replacement (TMVR) is performed on patients who may not be candidates for conventional open-heart valve replacement surgery. Catheter based access is obtained through an artery.
Transcatheter devices inserted via an open approach are captured as a surgical MVR. This field is for transcatheter devices inserted via transcatheter.

If you participate in the TVT registry you may opt to submit transcatheter cases to the STS adult cardiac surgery registry in addition to the TVT registry, but it is not required.

Note: Both TAVR + TMVR done during same operative episode. This is an optional case for ACSD. Double valve should be entered if the site enters TAVR/TMVR cases into the ACSD. It will not be analyzed.

Note: Planned CABG for 1 day and a planned TVMR the next day - Code the TMVR in the Mitral Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TMVR procedure.

Note: While undergoing TMVR procedure, surgery was converted to open MVR. If the site usually enters TMVRs into the STS database and the patient ends up converting to SMVR (surgical MVR) then the TMVR should not be captured as the index procedure, the SMVR (surgical MVR) should be entered as the index procedure and the preoperative risk of the failed TMVR should be captured.

SEQ. #: 3612

Long Name: VS-Mitral Valve Procedure - Surgical Prosthetic Valve Intervention (Not Explant of Valve)

Short Name: SurgProsValInt
Definition: Indicate what procedure was performed on a previously implanted prosthetic mitral valve. If more than one intervention was performed, select all that apply.

Intent/Clarification: Leak of a previously place valve prosthesis.

- **Repair of periprosthetic leak -** Repair of a peri-prosthetic leak with one or more repair sutures without needing to remove the existing prosthesis.
- **Removal of Pannus - Pannus** removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- **Removal of Clot -** Clot or thrombus removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- **Other**

Repair of a periprosthetic leak done via transcatheter device is not entered into the ACSD.

SEQ. #: 3615
Long Name: VS-Mitral Implant
Short Name: MitralImplant
Definition: Indicate whether a mitral valve or valve device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3620
Long Name: VS-Mitral Implant - Type
Short Name: MitralImplantTy
Definition: Indicate the type of mitral valve or valve device implanted.

Intent/Clarification:

- Mechanical valve
- Bioprosthetic valve
- Annuloplasty Ring Surgical - **Update Oct 2020 may also be referred to as Annuloplasty Band**
- Annuloplasty without ring (pericardial or suture)
- Transcatheter device implanted open heart
- Transcatheter Replacement Device (Transapical)
- Trancatheter Replacement Device (Trans-septal)
- Annuloplasty Ring Transcatheter
- Mitral leaflet clip
- Other

Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacture website.

Note: When a "transcatheter" valve is used in an open cardiac procedure regard it as a valve replacement. Because the procedure is performed on CPB under direct vision code the implant type as Transcatheter device implanted open heart and include the model number of the transcatheter valve.

SEQ. #: 3621
Long Name: VS - Mitral Leaflet Clip Number Implanted
Short Name: MitralLeafletClipNum
Definition - If a mitral leaflet clip was implanted, enter the number of clips implanted. Exclude failed implant attempts.

Intent/Clarification: Enter the number of clips implanted.

SEQ. #: 3625

Long Name: VS-Mitral Proc-Implant Model Number
Short Name: VSMiIm
Definition: Indicate the model number of the device implanted. The names provided include the manufacturer's model number with "xx" substituting for the device size.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices. Entering the UDI will allow for valve identification.

SEQ. #: 3630
Long Name: VS-Mitral Proc-Imp-Size
Short Name: VSMiImSz
Definition: Indicate the Mitral implant size.

Intent/Clarification: ON-X valves with sizes such as 27/29 are coded as a 27.

SEQ. #: 3634
Long Name: VS-Mitral Proc-Imp-Unique Device Identifier (UDI)
Short Name: VSMiImUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification:
This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_

campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3636
Long Name: VS - Tricuspid Valve Procedure Performed - Type
Short Name: VSTrPr
Definition: Indicate the type of tricuspid procedure performed

Intent/Clarification:

- Repair
- Replacement
- Surgical Prosthetic Valve Intervention (Not Explant of Valve)

SEQ. #: 3637
Long Name: VS - Tricuspid Valve Repair Type
Short Name: VSTSRepairType
Definition: Indicate the type of tricuspid valve repair surgery. If more than one repair type was performed, choose all that apply.

Intent/Clarification:

- Annuloplasty - The tricuspid repair included an annuloplasty
- Transcatheter Clip/Device - The tricuspid repair included a transcatheter clip or device
- Leaflet Resection - The tricuspid repair included leaflet resection
- Pannus/Thrombus Removal (Native Valve) - The tricuspid repair included pannus or thrombus removal**.** Pannus is the ingrowth of fibrous tissue into the valve apparatus**. Update Oct 2020 – may also include removal of vegetation.**

SEQ. #: 3638
Long Name: VS-Tricuspid Repair - Annuloplasty Type
Short Name: OpTricusAnTy
Definition: Indicate type of annuloplasty procedure.

Intent/Clarification:

- Pericardium
- Suture
- Prosthetic ring
- Prosthetic band
- Other

SEQ. #: 3652
Long Name: VS-Tricuspid Transcatheter Valve Replacement
Short Name: VSTCVTri
Definition: Indicate whether the tricuspid valve replacement was done using a transcatheter valve device.

Intent/Clarification: Transcatheter Triscupid Valve Replacement (TTVR) is performed on patients, who may not be candidates for conventional open-heart valve replacement surgery. Catheter based access is obtained through an artery.

Transcatheter devices inserted via an open approach are captured as a surgical TVR. This field is for transcatheter devices inserted via transcatheter.

If you participate in the TVT registry you may opt to submit transcatheter cases to the STS adult cardiac surgery registry in addition to the TVT registry, but it is not required.

Note: Both TTVR + TMVR done during same operative episode. This is an optional case for ACSD. Double valve should be entered if the site enters TTVR/TMVR cases into the ACSD. It will not be analyzed.

Note: Planned CABG for 1 day and a planned TTVR the next day - Code the TTVR in the Tricupid Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TTVR procedure.

Note: While undergoing TTVR procedure, surgery was converted to open TVR. If the site usually enters TTVRs into the STS database and the patient ends up converting to STVR (surgical TVR) then the TTVR should not be captured as the index procedure, the STVR (surgical TVR) should be entered as the index procedure and the preoperative risk of the failed TTVR should be captured.

SEQ.#: 3653
Long Name: VS-Tricuspid Valve Procedure - Surgical Prosthetic Valve Intervention (Not Explant of Valve)
Short Name: VSTVSurgProsthValIntType
Definition: Indicate what procedure was performed on a previously implanted prosthetic Tricuspid valve. If more than one intervention was performed, select all that apply.

Intent/Clarification: Leak of a previously place valve prosthesis.

- **Repair of periprosthetic leak -** Repair of a peri-prosthetic leak with one or more repair sutures without needing to remove the existing prosthesis.
- **Removal of Pannus -** Pannus removal from Surgical Prosthetic Valve without needing to remove the existing prosthesis.
- **Removal of Clot -** Clot or thrombus removal from Surgical Prosthetic Valve without needing to remove the existing prosthesis.
- **Other**

Repair of a periprosthetic leak done via transcatheter device is not entered into the ACSD.

SEQ. #: 3660
Long Name: VS-Tricuspid Implant
Short Name: TricuspidImplant
Definition: Indicate whether a tricuspid valve or device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3665
Long Name: VS-Tricuspid Implant - Type
Short Name: TricusImplantTy
Definition: Indicate the type of tricuspid valve or valve device implanted.

Intent/Clarification:

- Mechanical valve
- Annuloplasty device
- Bioprosthetic valve
- Homograft
- Transcatheter device implanted open heart
- Transcatheter valve
- Other – includes fashioned from CorMatrix

Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website.

SEQ. #: 3670
Long Name: VS-Tricuspid Proc-Implant Model Number
Short Name: VSTrIm
Definition: Indicate the model number of the prosthesis implanted. The names provided include the manufacturer's model number with "xx" substituting for the device size.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices. Entering the UDI will allow for valve identification.

SEQ. #: 3675
Long Name: VS-Tricuspid Proc-Imp-Size
Short Name: VSTrImSz
Definition: Indicate the Tricuspid implant size.

Intent/Clarification:

SEQ. #: 3680
Long Name: VS-Tricuspid Proc-Imp-Unique Device Identifier (UDI)
Short Name: VSTrImUDI

Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

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SEQ. #: 3683
Long Name: VS-Tricuspid Valvectomy
Short Name: VSTrValvec
Definition: Indicate whether tricuspid valvectomy was performed

Intent/Clarification: Intended to capture procedures where the tricuspid valve is removed.

- Yes
- No

SEQ. #: 3690
Long Name: VS-Pulmonic Proc-Procedure
Short Name: OpPulm
Definition: Indicate the type of procedure that was performed on the pulmonic valve.

Intent/Clarification:

- Repair / Leaflet Reconstruction

- Pannus or Thrombus removal - **Update Oct 2020 – may also include removal of vegetation.**
- Replacement
- Valvectomy

For a Redo pulmonary valve replacement where a patching of the pulmonary artery using bovine pericardium is done, do not code anything additional. The PA was most likely narrowed because of the prior surgery. The narrowing would require a patch for closure.

SEQ. #: 3695
Long Name: VS-Pulmonic Transcatheter Valve Replacement
Short Name: VSTCVPu
Definition: Indicate whether the pulmonic valve replacement was done using a transcatheter valve device.

Intent/Clarification:

- Yes
- No

Transcatheter Triscupid Valve Replacement (TPVR) is perfomed on patients, who may not be candidates for conventional open-heart valve replacement surgery. Catheter based access is obtained through an artery.

Transcatheter devices inserted via an open approach are captured as a surgical PVR. This field is for transcatheter devices inserted via transcatheter.

SEQ. #: 3700
Long Name: VS-Pulmonic Implant
Short Name: PulmonicImplant
Definition: Indicate whether a pulmonic valve or device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3701
Long Name: VS-Pulmonic - Type Of Implant
Short Name: VSPuTypeImp
Definition: Indicate the type of pulmonic implant

Intent/Clarification:

- Surgeon Fashioned
- Commercially Supplied

SEQ. #: 3702

Long Name: VS-Pulmonic - Surgeon Fashioned Implant Material
Short Name: VSPuImpMat
Definition: Indicate the material used to fashion the pulmonic implant

Intent/Clarification: Unlike conventional valve replacement, measured and crafted to meet specific dimensions of the annulus.

- PTFE (Gore-Tex)
- Pericardium
- Other

SEQ. #: 3705
Long Name: VS-Pulmonic Implant - Device Type
Short Name: PulmonicImplantTy
Definition: Indicate the type of pulmonic valve or valve device implanted.

Intent/Clarification:

- Mechanical valve
- Bioprosthetic valve
- Transcatheter device
- Transcatheter device implanted open heart
- Annuloplasty device
- Homograft
- Other

Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacture website.

SEQ. #: 3710

Long Name: VS-Pulmonic Proc-Implant Model Number
Short Name: VSPuIm
Definition: Indicate the model number of the prosthesis implanted. The names provided include the manufacturer's model number with "xx" substituting for the device size.

Intent/Clarification: Choose the device type from the device list. Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices and entering the UDI will allow for valve identification.

SEQ. #: 3715

Long Name: VS-Pulmonic Proc-Imp-Size
Short Name: VSPulmSz
Definition: Indicate the Pulmonic implant size.

Intent/Clarification:

SEQ. #: 3720
Long Name: VS-Pulmonic Proc-Imp-Unique Device Identifier
Short Name: VSPulmUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification:
This is a unique identifier that will be on each valve. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

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Mechanical Cardiac Assist Devices

General Information:

NUPULSE (implantable IABP's) is not captured in the ACSD database. It is captured in INTERMACS.

Preop placement by any Provider applies to devices in at the time of surgery, not previously placed and removed devices.

SEQ. #: 3725
Long Name: IABP
Short Name: IABP
Definition: Indicate whether the patient was placed on an Intra-Aortic Balloon Pump (IABP).

Intent/Clarification: IABP is a device inserted into the descending thoracic aorta distal to the left subclavian and proximal to the renal arteries used to increase coronary blood flow and decrease work of the left ventricle. Balloon catheter inflates and deflates rapidly in conjunction with cardiac cycle. Inflation of the balloon partially obstructs the aorta, diverting more blood into coronary arteries. Deflation of the balloon just prior to systole, allows blood to be more easily ejected by the left ventricle.
This applies to IABP devices in at the time of surgery, not previously placed and removed devices.

- Yes
- No

SEQ. #: 3730
Long Name: IABP-When Inserted
Short Name: IABPWhen
Definition: Indicate when the IABP was inserted.

Intent/Clarification: Identify when the IABP was inserted as it relates to the cardiac operation.

- **Preop** refers to the IABP placement in the Cath lab or in the ICU prior to patient entering the operating room for the index surgical procedure. **This applies to IABP devices in at the time of surgery, not previously placed and removed devices.**

- **Intraop** refers to insertion of the IABP during the index surgical procedure (after the patient has entered the operating room and before the patient leaves the operating room).

- **Postop** refers to insertion of the IABP after the patient has left the operating room for the index surgical procedure.

Note: If you have an IABP placed both pre-op and post-op, code the pre-op placement.

Note: If you have an IABP placed both intra-op and post-op, code the intra-op placement.

SEQ. #: 3766
Long Name: MCAD - ECMO

Short Name: MCADECMO
Definition - Indicate if Extracorporeal membrane oxygenation (ECMO) was used at any time during the acute care period.

Intent/Clarification:

- Yes
- No

ECMO, which stands for Extracorporeal Membrane Oxygenation, functions as a replacement for a critically ill patient's heart and lungs. It is used to support a patient who is awaiting surgery or to give vital organs time to recover from heart surgery or disease. It can also be used to rewarm victims of hypothermia or drowning.

ECMO initiation may be done in the OR or at the bedside in the ICU.

Note: Pre-op ECMO is to be captured as a status of 'Salvage' in sequence 1975 and as 'Resuscitation – Yes' in sequence 935. ECMO is a supportive modality and not a procedural type. The risk of the patient on ECMO is accounted for when 'Status = salvage' and should be left in the intended procedural category.

SEQ. #: 3776
Long Name: ECMO Mode
Short Name: ECMO
Definition: Indicate the mode in which the patient was placed on ECMO.

Intent/Clarification:

- Veno-Venous - VV ECMO only provides support for the lungs. During veno-venous ECMO deoxygenated blood is drained from a large vein, oxygenated and decarboxylated in an extracorporeal device and returned to the right atrium.
- Veno-Arterial - VA ECMO provides support to the heart and the lung. Blood is drained from the right atrium, oxygenated and returned via an artery towards the aorta.
- Veno-Arterial Venous (VAV) - Triple cannulation is a novel and special form of ECMO support, which is usually employed as an "upgrade" of an existing veno-venous or veno-arterial ECMO circuit. Triple cannulation may either be instituted as veno-veno-arterial or veno-arterio-venous cannulation, which are essentially different in terms of circulatory and respiratory support as well as associated ventilator and medical management. Veno-arterio-venous ECMO (VAV) is utilized when circulatory support with VA ECMO is complicated by respiratory failure or when respiratory support by veno-venous ECMO is complicated by heart failure.
- Veno-Venous Arterial (VVA) – Triple cannulation is a novel and special form of ECMO support, which is usually employed as an "upgrade" of an existing veno-venous or veno-arterial ECMO circuit. Triple cannulation may either be instituted as veno-veno-arterial or veno-arterio-venous cannulation, which are essentially different in terms of circulatory and respiratory support as well as associated ventilator and medical management. Veno-veno-arterial ECMO (VVA) is utilized when unloading by VA ECMO is not enough.
-

VV ECCO2R is coded as VV ECMO.

Note: If a patient is placed on 2 different modes of ECMO pre-op, capture the mode of ECMO the patient is on when entering the OR.

Note: If a patient is placed on intra-op ECMO and then is placed on a different mode post-op, capture the intra-op mode.

SEQ. #: 3780
Long Name: ECMO Initiated
Short Name: ECMOWhen
Definition: Indicate when patient was placed on ECMO.

Intent/Clarification:

- **Preop** refers to placement in the Cath lab or in the ICU prior to patient entering the operating room for the index surgical procedure. **This applies to ECMO in at the time of surgery, not previously placed and removed devices.**

- **Intraop** refers to insertion during the index surgical procedure.

- **Postop** refers to insertion after the patient has left the operating room for the index surgical procedure.

- **Non**-**Operative** refers to patients who have ECMO initiated by a CT surgeon but are not having a CT surgery procedure. Stand-alone procedures are not mandatory to collect, however if your surgeon(s) elects to track these, use this harvest code.

Note: If you have ECMO placed both pre-op and post-op, code the pre-op placement.

Note: Capture institution of post-operative ECMO in Seq 3766, 3776, 3780 and in Seq 6778 a re-op for Other Cardiac Procedure for any ECMO regardless of where ECMO placement is performed.

SEQ. #: 3786
Long Name: Temporary Assist Device Used
Short Name: CathBasAssist
Definition: Indicate whether the patient was placed on a catheter-based assist device (e.g., Impella).

Intent/Clarification: Indicate whether the patient was placed on a temporaory ventricular assist device. Temporary assist devices may be catheter based or placed open and offer short term invasive circulatory support. A temporary or percutaneous assist device is a small mechanical pump that provides short-term support for the heart. If the intent at implantation is for a short-term or temporary assist, code in this section.

Do not capture devices inserted and removed prior to the index operation.

Temporary assist devices are captured in this section and are not included in section L.2 Ventricular Assist Devices. Examples include but are not limited to Impella, Tandem Heart and Protek Duo. **The following devices Abiomed BVS5000, Abiomed AB5000, Thoratec PVAD, Thoratec CentriMag, and Levitronix CentriMag may be used as short term or long-term devices.** If the intent at implantation is for a short-term or temporary assist, code in this section.

Note that only long-term durable devices should be included in the L.2 VAD section. If the device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786) - Yes.

The devices highlighted below may be used as short term or long-term devices. If the highlighted device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786) – Yes and DO NOT code in L.2 VAD section.

Description
Abiomed AB 5000
Abiomed Abiocor TAH
Abiomed BVS 5000
BerlinHeart EXCOR
BerlinHeart INCOR
CircuLite Synergy Endovascular Micro-Pump System
CircuLite Synergy Micro-Pump (Surgical System)
HeartWare HVAD
Jarvik 2000
Levitronix CentriMag
Levitronix PediMag
LifeBridge
Maquet ROTAFLOW Centrifugal Pump system
Medtronic Biomedicus (Biopump)
Micromed Heart Assist 5 (DeBakey)
pCAS
PediaFlow
PediPump
PennState PVAD
Sorin Revolution
Syncardia CardioWest TAH
Terumo Duraheart
Thoratec Centrimag
Thoratec Heart Mate II
Thoratec Heart Mate IP
Thoratec Heart Mate VE
Thoratec Heart Mate XVE
Thoratec IVAD
Thoratec PediMag/ PediVas
Thoratec PVAD
WorldHeart NovaCor
WorldHeart Pediaflow

WorldHeart MiFlow
Maquet CardioHelp model #70104-7999
Thoratec Heartmate lll MLP-002487
THORATEC HEARTMATE III IMPLANT KIT (VAD) 106524
Other

SEQ. #: 3787
Long Name: Temporary Assist Device Used - Position
Short Name: TempAssistDevPos
Definition - Indicate if the temporary assist device was open or catheter based.

Intent/Clarification:
- Open
- Catheter Based

SEQ. #: 3788
Long Name: Temporary Assist Type
Short Name: CathBasAssistTy
Definition: Indicate the type of catheter-based assist device.

Intent/Clarification: Indicate if type of temporary assist device.
- RV (Right Ventricular)
- LV (Left Ventricular)
- BiV (Biventricular)

SEQ. #: 3789
Long Name: Temporary Assist Device When Inserted
Short Name: CathBasAssistWhen
Definition: Indicate when the catheter-based assist device was inserted.

Intent/Clarification: Identify when the temporary assist device was inserted as it relates to the index cardiac operation.
- **Preop** refers to placement in the Cath lab or in the ICU prior to patient entering the operating room for the index surgical procedure. **Do not capture devices inserted and removed prior to the index operation.**
- **Intraop** refers to insertion during the index surgical procedure.
- **Postop** refers to insertion after the patient has left the operating room for the index surgical procedure.

Note: If you have a temporary assist device placed both pre-op and post-op, code the pre-op placement.

Note: If you have a temporary assist device placed both intra-op and post-op, code the intra-op placement.

Ventricular Assist Devices

General Information:

Note that only long-term durable devices should be included in the L.2 VAD section. If the device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786).

It is required that VADs inserted in conjunction with a CV surgery be captured with the associated procedure.

Stand-alone VAD should be entered into Intermacs registry.

LVAD's that are "decommissioned" in the cath lab by removing the driveline and leaving the pump in situ are not included in ACSD. This would be included in Intermacs database only.

SEQ. #: 3790
Long Name: VAD-Patient Admitted With VAD
Short Name: PrevVAD
Definition: Indicate if at the time of this procedure, the patient has a VAD in place that was inserted during a previous admission or from an outside hospital.

Intent/Clarification:

- Yes
- No

SEQ. #: 3800
Long Name: Previous VAD Insertion Date
Short Name: PrevVADD
Definition: Indicate insertion date of previous VAD.

Intent/Clarification: Required date format: mm/dd/yyyy.

If month and year are known code month/01/year. If only the year is known code 01/01/Year. Leave Blank if you have no information on the month, day, or year of the VAD.

SEQ. #: 3815
Long Name: Previous VAD Device Model Number
Short Name: PrevVADDevice
Definition: Indicate Previous VAD device.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not

listed should be entered as Other – FDA approved or Other Non-FDA approved devices and entering the UDI will allow for identification.

SEQ. #: 3820
Long Name: Previous VAD Unique Device Identifier (UDI)
Short Name: PrevVADUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3825
Long Name: Previous VAD Explanted During This Admission
Short Name: PrevVADExp
Definition: Indicate whether the previously inserted VAD was explanted during this hospitalization.

Intent/Clarification:

- Yes, not during this procedure but in a prior procedure in the operating room.
- Yes, during this procedure
- No

SEQ. #: 3840

Long Name: Ventricular Assist Device Implanted During This Hospitalization
Short Name: VADImp
Definition: Indicate whether a VAD was inserted during this hospitalization.

Intent/Clarification: Note that only long-term durable devices should be included in the L.2 VAD section. If the device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786).

SEQ. #: 3845
Long Name: VAD-Implant Timing
Short Name: VADImpTmg
Definition: Indicate timing of VAD insertion.

Intent/Clarification: Indicate the timing of insertion:

- Pre-operative (during the same hospitalization but not the same OR trip as the index cardiovascular surgical procedure. **This applies to devices in at the time of surgery, not previously placed and removed devices.**
- Stand-alone VAD procedure-this was the only procedure performed.
- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-planned. In conjunction with a CV surgical procedure and planned before surgery, consent in the chart.
- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-unplanned. In conjunction with a CV surgical procedure and not planned before surgery.
- Post-operative (after the index surgical procedure during reoperation)

SEQ. #: 3850
Long Name: VAD Implant Indication
Short Name: VADInd
Definition: Indicate the reason for implanting a Ventricular Assist Device (VAD) during this hospitalization.

Intent/Clarification:

- **Bridge to Transplantation:** Includes those patients who are supported with a VAD until a heart transplant is possible.
- **Bridge to Recovery:** Includes those patients who are expected to have ventricular recovery. (i.e. Myocarditis patients, viral cardiomyopathies, AMI w/revascularization, post-transplant reperfusion injury).
- **Destination:** Includes those patients where a heart transplant is not an option. The VAD is placed for permanent life sustaining support.
- **Post Cardiotomy Ventricular Failure:** Includes those postcardiotomy patients who receive a VAD because of failure to separate from the heart-lung machine.

Postcardiotomy refers to those patients with the inability to wean from cardiopulmonary bypass secondary to left, right, or biventricular failure.

- **Device Malfunction:** Includes those patients who are currently VAD supported and are experiencing device failure.
- **End of (device) Life:** Mechanical device pump has reached functional life expectancy and requires replacement.
- **Salvage:** Moribund patients unresponsive to medical interventions.

SEQ. #: 3855
Long Name: VAD-Implant Type
Short Name: VImpTy
Definition: Indicate the first type of VAD implanted during this hospitalization.

Intent/Clarification:

- Right VAD (RVAD) - Right Ventricular Assist Device
- Left VAD (LVAD) - Left Ventricular Assist Device
- Biventricular VAD (BiVAD) - Biventricular Assist Device
- Total Artificial Heart (TAH)

SEQ. #: 3860
Long Name: VAD-Device
Short Name: VProdTy
Definition: Indicate the VAD brand name implanted. Implant defined as physical placement of the VAD.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices and entering the UDI will allow for identification.
https://link.springer.com/article/10.1007/s40137-014-0058-x

The devices highlighted below may be used as short term or long-term devices. Note that only long-term durable devices should be included in the L.2 VAD section. If the highlighted device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786) – Yes and DO NOT code in L.2 VAD section.

Description
Abiomed AB 5000
Abiomed Abiocor TAH
Abiomed BVS 5000
BerlinHeart EXCOR
BerlinHeart INCOR
CircuLite Synergy Endovascular Micro-Pump System
CircuLite Synergy Micro-Pump (Surgical System)

HeartWare HVAD
Jarvik 2000
Levitronix CentriMag
Levitronix PediMag
LifeBridge
Maquet ROTAFLOW Centrifugal Pump system
Medtronic Biomedicus (Biopump)
Micromed Heart Assist 5 (DeBakey)
pCAS
PediaFlow
PediPump
PennState PVAD
Sorin Revolution
Syncardia CardioWest TAH
Terumo Duraheart
Thoratec Centrimag
Thoratec Heart Mate II
Thoratec Heart Mate IP
Thoratec Heart Mate VE
Thoratec Heart Mate XVE
Thoratec IVAD
Thoratec PediMag/ PediVas
Thoratec PVAD
WorldHeart NovaCor
WorldHeart Pediaflow
WorldHeart MiFlow
Maquet CardioHelp model #70104-7999
Thoratec Heartmate lll MLP-002487
THORATEC HEARTMATE III IMPLANT KIT (VAD) 106524
Other

SEQ. #: 3865
Long Name: VAD-Implant Date
Short Name: VImpDt
Definition: Indicate the date the VAD was implanted.

Intent/Clarification: Required date format: mm/dd/yyyy

SEQ. #: 3870
Long Name: VAD-Implant Unique Device Identifier (UDI)
Short Name: VImpUDI
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3875
Long Name: VAD-Explant
Short Name: VExp
Definition: Indicate if the VAD was explanted. Explant is defined as physical removal of the VAD.

Intent/Clarification:

- Yes, not during this procedure
- Yes, during this procedure
- No

SEQ. #: 3880

Long Name: VAD-Explant Reason
Short Name: VExpRsn
Definition: Indicate the reason the VAD was explanted.

Intent/Clarification:

- **Cardiac Transplant** -VAD was explanted for cardiac transplant.
- **Recovery** -VAD was removed after cardiac recovery.
- **Device Transfer** -VAD was explanted in order to implant another assist device.
- **Device-Related Infection** - An infection within the pump pocket, driveline, VAD endocarditis, or other infection requiring explanation of the VAD. The body of the VAD has an active infection requiring removal to eliminate the infection. "Device-related infections" are defined as positive culture in the presence of leukocytosis, and/or fever requiring medical or surgical intervention.
- **Device Malfunction** -The VAD pump itself is not functioning properly causing hemodynamic compromise, and/or requiring immediate intervention or VAD replacement.
- **End of (device) Life** -Mechanical device pump has reached functional life expectancy and requires replacement.

Note: Code "No" if the patient expires with the VAD in place; the VAD was not explanted.

SEQ. #: 3885
Long Name: VAD-Explant Date
Short Name: VExpDt
Definition: Indicate the date the VAD was explanted.

Intent/Clarification: Parent field is "Yes not during this surgery". You will not be able to fill out the date if the VAD is explanted "Yes during this procedure". Required date format: mm/dd/yyyy

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SEQ. #: 3895
Long Name: VAD-Implant #2
Short Name: VImp2
Definition: Indicate whether a second ventricular assist device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3900
Long Name: VAD-Implant Timing #2
Short Name: VADImpTmg2
Definition: Indicate timing of VAD #2 insertion.

Intent/Clarification:

- Pre-operative (during the same hospitalization but not the same OR trip as the index cardiovascular surgical procedure.
- Stand-alone VAD procedure-this was the only procedure performed.
- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-planned. In conjunction with a CV surgical procedure and planned before surgery, consent in the chart.

- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-unplanned. In conjunction with a CV surgical procedure and not planned before surgery.
- Post-operative (after the index surgical procedure during reoperation)

SEQ. #: 3905
Long Name: VAD-Indication for this VAD #2
Short Name: VADInd2
Definition: Indicate the reason for implanting a Ventricular Assist Device (VAD) #2 during this hospitalization.

Intent/Clarification:

- **Bridge to Transplantation:** Includes those patients who are supported with a VAD until a heart transplant is possible.
- **Bridge to Recovery:** Includes those patients who are expected to have ventricular recovery. (i.e. Myocarditis patients, viral cardiomyopathies, AMI w/revascularization, post-transplant reperfusion injury).
- **Destination:** Includes those patients where a heart transplant is not an option. The VAD is placed for permanent life sustaining support.
- **Post Cardiotomy Ventricular Failure:** Includes those postcardiotomy patients who receive a VAD because of failure to separate from the heart-lung machine. Postcardiotomy refers to those patients with the inability to wean from cardiopulmonary bypass secondary to left, right, or biventricular failure.
- **Device Malfunction:** Includes those patients who are currently VAD supported and are experiencing device failure.
- **End of (device) Life:** Mechanical device pump has reached functional life expectancy and requires replacement.
- **Salvage:** Moribund patients unresponsive to medical interventions.

SEQ. #: 3910
Long Name: VAD-Implant Type #2
Short Name: VImpTy2
Definition: Indicate the second type of ventricular assist device implanted.

Intent/Clarification:

- Right VAD (RVAD) - Right Ventricular Assist Device
- Left VAD (LVAD) - Left Ventricular Assist Device
- Biventricular VAD (BiVAD) - Biventricular Assist Device
- Total Artificial Heart (TAH)

SEQ. #: 3915
Long Name: VAD-Device #2
Short Name: VProdTy2

Definition: Indicate the specific product #2 implanted. Implant defined as physical placement of the VAD.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices and entering the UDI will allow for identification

The devices highlighted below may be used as short term or long-term devices. Note that only long-term durable devices should be included in the L.2 VAD section. If the highlighted device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786) – Yes and DO NOT code in L.2 VAD section.

Description
Abiomed AB 5000
Abiomed Abiocor TAH
Abiomed BVS 5000
BerlinHeart EXCOR
BerlinHeart INCOR
CircuLite Synergy Endovascular Micro-Pump System
CircuLite Synergy Micro-Pump (Surgical System)
HeartWare HVAD
Jarvik 2000
Levitronix CentriMag
Levitronix PediMag
LifeBridge
Maquet ROTAFLOW Centrifugal Pump system
Medtronic Biomedicus (Biopump)
Micromed Heart Assist 5 (DeBakey)
pCAS
PediaFlow
PediPump
PennState PVAD
Sorin Revolution
Syncardia CardioWest TAH
Terumo Duraheart
Thoratec Centrimag
Thoratec Heart Mate II
Thoratec Heart Mate IP
Thoratec Heart Mate VE
Thoratec Heart Mate XVE
Thoratec IVAD
Thoratec PediMag/ PediVas
Thoratec PVAD
WorldHeart NovaCor
WorldHeart Pediaflow
WorldHeart MiFlow
Maquet CardioHelp model #70104-7999

Thoratec Heartmate lll MLP-002487
THORATEC HEARTMATE III IMPLANT KIT (VAD) 106524
Other

SEQ. #: 3920
Long Name: VAD-Implant Date #2
Short Name: VImpDt2
Definition: Indicate the date the VAD #2 was implanted.

Intent/Clarification: Required date format: mm/dd/yyyy

SEQ. #: 3925
Long Name: VAD-Implant Unique Device Identifier (UDI) #2
Short Name: VImpUDI2
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3930

Long Name: VAD-Explant #2
Short Name: VExp2
Definition: Indicate if the VAD #2 was explanted. Explant is defined as physical removal of the VAD.

Intent/Clarification:

- Yes, not during this procedure
- Yes, during this procedure
- No

SEQ. #: 3935
Long Name: VAD-Explant Reason #2
Short Name: VExpRsn2
Definition: Indicate the reason the VAD #2 was explanted.

Intent/Clarification:

- **Cardiac Transplant** -VAD was explanted for cardiac transplant.
- **Recovery** -VAD was removed after cardiac recovery.
- **Device Transfer** -VAD was explanted in order to implant another assist device.
- **Device-Related Infection** - An infection within the pump pocket, driveline, VAD endocarditis, or other infection requiring explanation of the VAD. The body of the VAD has an active infection requiring removal to eliminate the infection. "Device-related infections" are defined as positive culture in the presence of leukocytosis, and/or fever requiring medical or surgical intervention.
- **Device Malfunction** -The VAD pump itself is not functioning properly causing hemodynamic compromise, and/or requiring immediate intervention or VAD replacement.
- **End of (device) Life** -Mechanical device pump has reached functional life expectancy and requires replacement.

Note: Code “No” if the patient expires with the VAD in place; the VAD was not explanted.

SEQ. #: 3940
Long Name: VAD-Explant Date #2
Short Name: VExpDt2
Definition: Indicate the date the VAD #2 was explanted.

Intent/Clarification: Parent field is “Yes not during this surgery”. You will not be able to fill out the date if the VAD is explanted “Yes during this procedure”.
Required date format: mm/dd/yyyy

SEQ. #: 3950
Long Name: VAD-Implant #3
Short Name: VImp3

Definition: Indicate whether a third ventricular assist device was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 3955
Long Name: VAD-Implant Timing #3
Short Name: VADImpTmg3
Definition: Indicate timing of VAD #3 insertion.

Intent/Clarification:

- Pre-operative (during the same hospitalization but not the same OR trip as the index cardiovascular surgical procedure.
- Stand-alone VAD procedure-this was the only procedure performed.
- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-planned. In conjunction with a CV surgical procedure and planned before surgery, consent in the chart.
- In conjunction with the cardiovascular surgical procedure (same trip to the OR)-unplanned. In conjunction with a CV surgical procedure and not planned before surgery.
- Post-operative (after the index surgical procedure during reoperation)

SEQ. #: 3960
Long Name: VAD-Indication for this VAD #3
Short Name: VADInd3
Definition: Indicate the reason for implanting a Ventricular Assist Device (VAD)#3 during this hospitalization.

Intent/Clarification:

- **Bridge to Transplantation:** Includes those patients who are supported with a VAD until a heart transplant is possible.
- **Bridge to Recovery:** Includes those patients who are expected to have ventricular recovery. (i.e. Myocarditis patients, viral cardiomyopathies, AMI w/revascularization, post-transplant reperfusion injury).
- **Destination:** Includes those patients where a heart transplant is not an option. The VAD is placed for permanent life sustaining support.
- **Post Cardiotomy Ventricular Failure:** Includes those postcardiotomy patients who receive a VAD because of failure to separate from the heart-lung machine. Postcardiotomy refers to those patients with the inability to wean from cardiopulmonary bypass secondary to left, right, or biventricular failure.
- **Device Malfunction:** Includes those patients who are currently VAD supported and are experiencing device failure.
- **End of (device) Life:** Mechanical device pump has reached functional life expectancy and requires replacement.
- **Salvage:** Moribund patients unresponsive to medical interventions.

SEQ. #: 3965
Long Name: VAD-Implant Type #3
Short Name: VImpTy3
Definition: Indicate the third type of ventricular assist device implanted.

Intent/Clarification:

- Right VAD (RVAD) - Right Ventricular Assist Device
- Left VAD (LVAD) - Left Ventricular Assist Device
- Biventricular VAD (BiVAD) - Biventricular Assist Device
- Total Artificial Heart (TAH)

SEQ. #: 3970
Long Name: VAD-Device #3
Short Name: VProdTy3
Definition: Indicate the specific product #3 implanted. Implant defined as physical placement of the VAD.

Intent/Clarification: Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as Other – FDA approved or Other Non-FDA approved devices and entering the UDI will allow for identification.

The devices highlighted below may be used as short term or long-term devices. Note that only long-term durable devices should be included in the L.2 VAD section. If the highlighted device is used as a temporary assist device. Code as Temporary Assist Device in field CathBasAssist (SEQ 3786) – Yes and DO NOT code in L.2 VAD section.

Description
Abiomed AB 5000
Abiomed Abiocor TAH
Abiomed BVS 5000
BerlinHeart EXCOR
BerlinHeart INCOR
CircuLite Synergy Endovascular Micro-Pump System
CircuLite Synergy Micro-Pump (Surgical System)
HeartWare HVAD
Jarvik 2000
Levitronix CentriMag
Levitronix PediMag
LifeBridge
Maquet ROTAFLOW Centrifugal Pump system
Medtronic Biomedicus (Biopump)
Micromed Heart Assist 5 (DeBakey)
pCAS
PediaFlow
PediPump

PennState PVAD
Sorin Revolution
Syncardia CardioWest TAH
Terumo Duraheart
Thoratec Centrimag
Thoratec Heart Mate II
Thoratec Heart Mate IP
Thoratec Heart Mate VE
Thoratec Heart Mate XVE
Thoratec IVAD
Thoratec PediMag/ PediVas
Thoratec PVAD
WorldHeart NovaCor
WorldHeart Pediaflow
WorldHeart MiFlow
Maquet CardioHelp model #70104-7999
Thoratec Heartmate lll MLP-002487
THORATEC HEARTMATE III IMPLANT KIT (VAD) 106524
Other

SEQ. #: 3975
Long Name: VAD-Implant Date #3
Short Name: VImpDt3
Definition: Indicate the date the VAD #3 was implanted.

Intent/Clarification: Required date format: mm/dd/yyyy

SEQ. #: 3980
Long Name: VAD-Implant Unique Device Identifier (UDI) #3
Short Name: VImpUDI3
Definition: Indicate the device UDI if available, otherwise leave blank.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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SEQ. #: 3985
Long Name: VAD-Explant #3
Short Name: VExp3
Definition: Indicate if the VAD #3 was explanted. Explant is defined as physical removal of the VAD.

Intent/Clarification:

- Yes, not during this procedure
- Yes, during this procedure
- No

SEQ. #: 3990
Long Name: VAD-Explant Reason #3
Short Name: VExpRsn3
Definition: Indicate the reason the VAD #3 was explanted.

Intent/Clarification:

- **Cardiac Transplant** -VAD was explanted for cardiac transplant.
- **Recovery** -VAD was removed after cardiac recovery.
- **Device Transfer** -VAD was explanted in order to implant another assist device.
- **Device-Related Infection** - An infection within the pump pocket, driveline, VAD endocarditis, or other infection requiring explanation of the VAD. The body of the VAD has an active infection requiring removal to eliminate the infection. "Device-related infections" are defined as positive culture in the presence of leukocytosis, and/or fever requiring medical or surgical intervention.
- **Device Malfunction** -The VAD pump itself is not functioning properly causing hemodynamic compromise, and/or requiring immediate intervention or VAD replacement.
- **End of (device) Life** -Mechanical device pump has reached functional life expectancy and requires replacement.

Note: Code “No” if the patient expires with the VAD in place; the VAD was not explanted**.**

SEQ. #: 3995
Long Name: VAD-Explant Date #3
Short Name: VExpDt3
Definition: Indicate the date the VAD #3 was explanted.

Intent/Clarification: Parent field is “Yes not during this surgery”. You will not be able to fill out the date if the VAD is explanted “Yes during this procedure”.
Required date format: mm/dd/yyyy

Other Cardiac Procedures

SEQ. #: 4051
Long Name: Other Card-Subaortic Stenosis Resection Type
Short Name: OCarSubaStenResTy
Definition: Indicate the type of subaortic stenosis.

Intent/Clarification: Subaortic stenosis (or subvalvular aortic stenosis) is a narrowing of the area below the aortic valve. This may vary from a thin layer of extra tissue to large bundles of heart muscle. This procedure is sometimes called septal myomectomy or septal myectomy. This can be performed alone for HOCM or in conjunction with an aortic valve procedure.

- Muscle
- Membrane
- Other – includes Web
- Not Documented
- No

SEQ. #: 4052
Long Name: Other Card-Pulmonary Thromboembolectomy
Short Name: OCPulThromDis
Definition: Indicate whether the patient had surgery for pulmonary thromboembolic disease.

Intent/Clarification: Indicate if an embolectomy or endarterectomy was performed.

- Yes, Acute
- Yes, Chronic
- No

SEQ. #: 4053
Long Name: Other Card-Myocardial Stem Cell Therapy
Short Name: OCarStemCell
Definition: Indicate whether myocardial stem cell procedure was performed.

Intent/Clarification: Indicate if regenerative stem cell therapy used for cardiac repair was performed.

- Yes
- No

SEQ. #: 4054
Long Name: Other Card-LVA
Short Name: OCarLVA
Definition: Indicate whether the patient had a Left Ventricular Aneurysm Repair.

Intent/Clarification: Indicate if a LV aneurysm repair was performed. Capture DOR also known as endoventricular circular patch plasty (EVCPP) procedures in this field.

- Yes
- No

Repair of LV aneurysm using a transcatheter approach using the Revivent Transcatheter Ventricular Enhancement System should not be included in the ACSD.

SEQ. #: 4055
Long Name: Other Card-Arrhythmia Device Surgery
Short Name: OCarACD
Definition: Indicate which arrhythmia correction device was surgically placed in conjunction with the primary surgical procedure.

Intent/Clarification:

- Permanent Pacemaker: An internal electronic generator that controls the heart rate
- Permanent Pacemaker with Cardiac Resynchronization Technique (CRT-P): An internal permanent pacemaker that uses biventricular electrical stimulation to synchronize ventricular contraction
- Implantable Cardioverter Defibrillator (ICD): An internal device that defibrillates the heart
- ICD with CRT (CRT-D): An internal ICD that uses biventricular electrical stimulation to synchronize ventricular contraction
- Implantable recorder
- None

SEQ. #: 4060
Long Name: Other Card-Lead Insertion
Short Name: OCarLeadInsert
Definition: Indicate whether lead(s) insertion was performed. Do not capture temporary lead placement.

Intent/Clarification: These include leads for pacemakers, implantable defibrillators or combination devices.

- Yes
- No

Do not capture leads placed for temporary pacemakers.

SEQ. #: 4065
Long Name: Other Card-Arrhythmia Correction Surgery-Lead Extraction
Short Name: OCarACDLE
Definition: Indicate whether procedure included lead extraction for a device intended to treat cardiac arrhythmias.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

Note: For a LVAD explant, ICD explant, and lead extraction done during a heart transplant, code the LVAD explant. The ICD explant and lead extraction are part of the previous heart and should not be captured.

Note: Explanation of Micra leadless ventricular pacemaker is coded as lead extraction, even though there are not traditional leads, as it still connects to the myocardium.

Note: For stand-alone lead extractions, enter all lead extractions regardless of approach when a participating CTS performs or actively participates in the procedure.

SEQ. #: 4110
Long Name: Other Card-Transmyocardial Laser Revascularization
Short Name: OCarLasr
Definition: Indicate whether the patient underwent the creation of multiple channels in left ventricular myocardium with a laser fiber either in conjunction with, or as the primary surgical procedure.

Intent/Clarification: A laser is used to make small transmural perforations in the heart. These channels allow for blood to enter the myocardium directly from the ventricular chamber or through communications with the native coronary circulations. Transmyocardial Laser Revascularization **(**TMR) is used primarily in areas of the heart where bypass grafting is not feasible, to improve collateralization of circulation.

- Yes
- No

SEQ. #: 4115
Long Name: Other Card-Tumor
Short Name: OCTumor

Definition: Indicate whether the patient had resection of an intracardiac tumor.

Intent/Clarification: Cardiac tumors are abnormal growths that can occur in the heart or on the heart valves. The tumors can be malignant or benign. Tumors can begin in the heart or in another part of the body. Tumors cause problems because of their size and location and can embolize:

- Myxoma
- Fibroelastoma
- Other - includes hypernephroma and sarcoma
- No

SEQ. #: 4120
Long Name: Other Card-Card Tx
Short Name: OCarCrTx
Definition: Indicate whether the patient had a Heterotopic or Orthotopic heart transplantation either in conjunction with, or as the primary surgical procedure.

Intent/Clarification:
Heterotopic Heart Transplant – The transplant recipient's heart is not explanted. A donor's heart is implanted as a "piggyback" to the patient's native heart. The donor heart acts as an assist pump for the diseased heart. The patient now has two hearts.

Orthotopic Heart Transplant – The patient's diseased native heart is excised and replaced with a donor heart. The recipient heart is removed completely except for small cuff of right and left atrium.

- Yes
- No

Note: Patient has a VAD inserted and then later in the same episode of care has a heart transplant. In this scenario, the transplant is the index procedure in this EOC. The mechanical assist device should be coded as previous CV interventions.

SEQ. #: 4125
Long Name: Other Card-Cardiac Trauma
Short Name: OCarTrma
Definition: Indicate whether the patient had a surgical procedure for an injury due to Cardiac Trauma either in conjunction with, or as the primary surgical procedure.

Intent/Clarification: Injury to the heart such as a gunshot wound, stab wound, car accident or other physical or blunt trauma induced injury.

Excludes surgical induced trauma.

- Yes
- No

SEQ. #: 4131

Long Name: Other Card-Acquired VSD Repair
Short Name: OCarAcqVSD
Definition: Indicate whether the patient had an acquired Ventricular Septal Defect Repair either in conjunction with, or as the primary surgical procedure.

Intent/Clarification: A VSD that is not congenital**.** Acquired VSD can occur as a result of a septal myocardial infarction, chest trauma and myocardial infection. Congenital VSD will be captured in Section M.3. Congenital Defect Repair.

- Yes
- No

SEQ. #: 4135

Long Name: Other Card-Other

Short Name: OCarOthr

Definition: Indicate whether the patient had another cardiac procedure performed either in conjunction with, or as the primary surgical procedure that is not included within this section.

Intent/Clarification: The following is a guideline for assessing which procedures to capture for Other Card - Other:

- Code procedures that have a high likelihood of negatively impacting a patient's outcome (survival, quality of life, ability to recover) and/or prolong the patient's length of stay. You do not want to code this if minor procedures were done in conjunction with a CABG or a Valve and lose the patient in the analysis of isolated procedures.

- For other cardiac procedures that are unplanned due to surgical complication code OpOCard – seq 2140 as 'Unplanned, due to surgical Complication'. This will open Section M, Other Cardiac Procedures. **If the other procedure that was performed is not listed as an option in Section M, do NOT code this as OCarOthr – seq 4135. Please answer "No" to all choices in Section M**. For SEQ 4135 it does not matter if it was for surgical complication or not. If other Cardiac Other SEQ 4135 is marked as no or missing it will stay in the isolated category. If you mark it as YES, it will fall out of the isolated category**.** STS wants the procedure to stay in the isolated category since it was a surgical complication

- Due to the difficulty of publishing a complete list of procedures to include and not to include in this field, the STS encourages sites to submit the procedure in question as a clinical question. Whether to include or not to include a procedure will be dealt with on a procedure by procedure basis. Below are a few examples that may assist you.
    - Pericardiectomy is coded as other cardiac procedure only when the pericardium is removed from the left phrenic nerve to the right phrenic nerve. A partial resection is not included as other cardiac procedure.

- MV replacement & left atrium clot evacuation. Do not capture the clot removal as other cardiac procedure since the left atrium is already open.

- MVR for endocarditis with erosion of the abscess into the left ventricle repaired with a pericardial patch. Do not capture the ventricle repair it is inherent to the MVR for endocarditis.

SEQ. #: 4136
Long Name: Other Card - ASD Repair
Short Name: OCardASDRep
Definition - Indicate if an ASD repair was performed.

Intent/Clarification:

- Yes
- No

SEQ. #: 4137
Long Name: Other Card - ASD Repair Type
Short Name: OCardASDRepTyp
Definition - Indicate if the ASD was congenital (secundum) or acquired.

Intent/Clarification: Atrial Septal Defect (ASD) is closed with/without patch. During normal development of the heart, there is an opening in the atrial septum.

- Congenital (Secundum): An ASD confined to the region of the fossa ovalis; its most common etiology is a deficiency of the septum primum, but deficiency of the limbus or septum secundum may also contribute.
- Acquired: An ASD that is not congenital. An acquired (Iatrogenic) ASD repair may be needed in patients with previous MitraClip repair or transcatheter mitral valve replacement (TMVR). Persistent interatrial shunting was associated with worse clinical outcomes and increased mortality.

Note: When a Mitral Valve procedure is performed via a trans-septal incision, the closure of the septum during the procedure should not be coded as an ASD repair.

Note: Capture Sinus Venosus ASD in Section M3 Congenital: An ASD with a vena cava or pulmonary vein (or veins) that overrides the atrial septum or the superior interatrial fold (septum secundum) producing an interatrial or anomalous veno-atrial communication. Although the term sinus venosus atrial septal defect is commonly used; the lesion is more properly termed a sinus venosus communication because, while it functions as an interatrial communication, this lesion is not a defect of the true atrial septum. ASDs in the upper part of the atrial septum (called sinus venosus) where the superior vena cava and right atrium join and can involve the right upper pulmonary vein.

SEQ. #: 4138
Long Name: Other Card - PFO Repair
Short Name: OCardPFORep
Definition: - Indicate if an PFO repair was performed.

Intent/Clarification: Normally, the opening between the left and right atria closes before birth, but if it does not, the child is born with a hole in this area called patent foramen ovale (PFO). A PFO is a small interatrial communication in the region of the foramen ovale characterized by no deficiency of the septum primum and a normal limbus with no deficiency of the septum secundum.

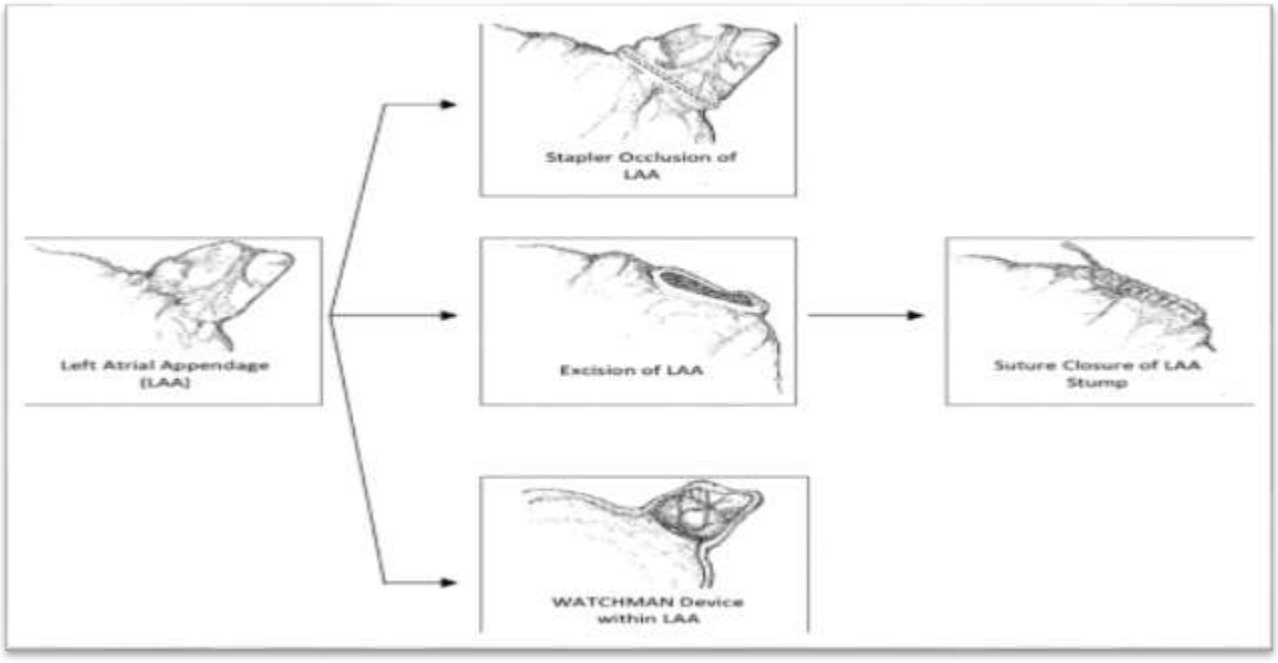
Endovascular (percutaneous) PFO closures are not included in the adult cardiac surgery database.

Atrial Fibrillation Procedures

SEQ. #: 4139
Long Name: Other Card-Left Atrial Appendage Obliteration
Short Name: OCarAAMeth
Definition: Indicate the method used to ligate/exclude the atrial appendage.

Intent/Clarification: Techniques for surgical LAA exclusion include suture closure from an endocardial or epicardial aspect, stapling, or epicardially applied occlusion devices. This does not include amputation or amputation with over-sewing which is captured in Seq 4142.

Do not capture Right Atrial Appendage obliteration in this field. The STS is no longer capturing RAA obliteration.



- Epicardially applied occlusion device – Includes commercially produced exclusion devices such as AtriClip, Lariat, and other commercially produced exclusion devices.
- Epicardial Staple - Includes Stapler (cutting) and Stapler (noncutting).
- Epicardial Suture – Includes epicardial suture ligation

- Endocardial Suture – Includes intra-atrial over-sewing
- Prior Transcatheter Device In Existence – Only capture this if you are already entering another procedure in this section. **Do not open this section to capture the existence of a previously placed Transcatheter Device.**
- Other - This does not include amputation or amputation with over-sewing which is captured in Seq 4142.
- No

FAQ Oct 2020 – How do I code left atrial appendage obliteration without MAZE procedure done.
Answer - Code SEQ 4139 as YES and then NO to SEQ 4191 and SEQ 4240 if no ablation lesions are created.

SEQ. #: 4141

Long Name: Other Card- Epicardial Occlusion Device UDI
Short Name: OCarAAUDI
Definition: Indicate the Unique Device Identifier of the epicardial occlusion device

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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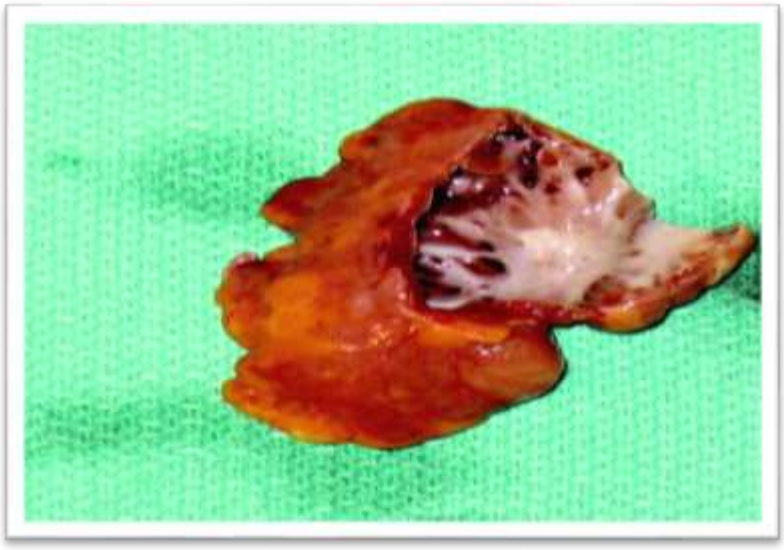
SEQ #: 4142
Long Name: Other Card- Left Atrial Appendage Amputation
Short Name: OCarAAppAmp
Definition - Indicate if a Left Atrial Appendage (LAA) amputation was performed.

Intent/Clarification: Includes surgical amputation and surgical amputation with over-sewing.



SEQ. #: 4191
Long Name: AFib Lesion Location
Short Name: OCarAFibLesLoc
Definition: Indicate the location of the majority of lesions created to treat atrial fibrillation.

Intent/Clarification: Indicate the location of the of lesions created to treat atrial fibrillation.

- Epicardial – Epicardial lesions were created for the purpose of AFib ablation. Lesions are created on the outside surface of the heart (i.e. pulmonary vein isolation with or without connection to the left atrial appendage).

- Intracardiac – Intracardiac lesions were created for the purpose of AFib ablation. Lesions are created inside the heart (i.e. Maze procedures; lesions to mitral annulus; etc). Intracardiac procedures carry a higher risk. If the procedure includes any intracardiac lesions, then code this as intracardiac. **Once the heart is open and an intracardiac lesion set is performed, then it is an intracardiac ablation no matter how many lesion sets are performed**

- Both **-** Both epicardial and intracardiac lesions were created for the purpose of

AFib ablation.

- None – Choose NONE when only the LAA is obliterated AND no other lesions are created.

Note: Epicardial botox injections for treatment of atrial fibrillation - Code this as yes Afib Procedure and in the a-fib section code primarily epicardial for lesion location and leave the method blank.

Note: The surgical component of the Convergent MAZE procedure completed by a Cardiothoracic Surgeon is captured in the Afib section as primarily epicardial and epicardial posterior wall other (i.e. Convergent procedure).

SEQ. #: 4201
Long Name: AFib Lesion - Method
Short Name: AFibLesMeth
Definition: Indicate whether the method used to create the lesion(s) for the AFib ablation procedure, choose all that apply.

Intent/Clarification:

- **Radiofrequency -** Radiofrequency energy uses an alternating current resulting in thermal injury to disrupt atrial fibrillation pathways. These probes can be applied to either endocardial or epicardial heart surfaces to create transmural linear lesions that block atrial conduction.
- **Cut-and-sew -** A technically difficult procedure where the lesions are created using a scalpel creating surgical incisions in the atrium and sewing them to create scars that inhibit re-entry rhythms.
- **Cryo -** Cryoablation used to restore normal heart rhythm. It freezes the heart tissue that triggers an irregular heartbeat. Cryoablation is performed with a nitrous oxide cooled probe that, when applied to atrial tissue, produces transmural lesions that block atrial conduction.

SEQ. #: 4205
Long Name: Atrial Fibrillation - Lesion Creation - Radiofrequency - Bipolar
Short Name: OCarAFibMethRadBi
Definition: Indicate whether the radiofrequency method used to create the lesion(s) for the AFib ablation was bipolar.

Intent/Clarification: If radiofrequency was used, was it bipolar. The bipolar clamping device produces narrower lesions which are more likely to be transmural and lead to electrical ablation than those produced by a unipolar device.

- Yes
- No
- Not Documented

SEQ. #: 4240
Long Name: Lesions Documented
Short Name: OCarLesDoc
Definition: Indicate whether the lesions created during the atrial fibrillation surgery are documented.

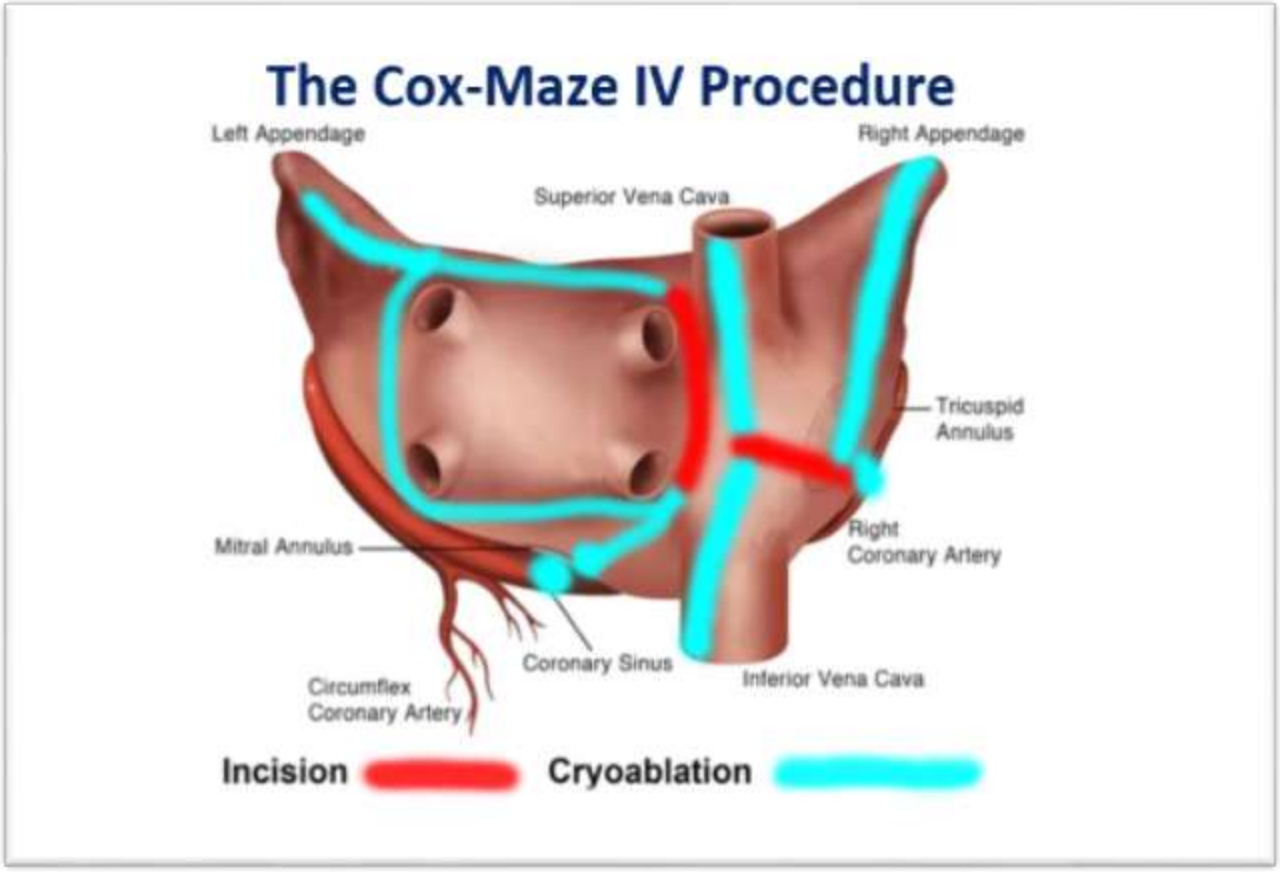
Intent/Clarification: Indicate whether the lesions were documented in the medical record.

- Yes – there is documentation of lesion lines
- No – there is no documentation for the lesion lines

SEQ. #: 4242
Long Name: Atrial Afibrillation - Lesion - Left Atrial
Short Name: AFibLeftAtrialLes
Definition - Indicate if Left Atrial lesions were performed.

Intent/Clarification:

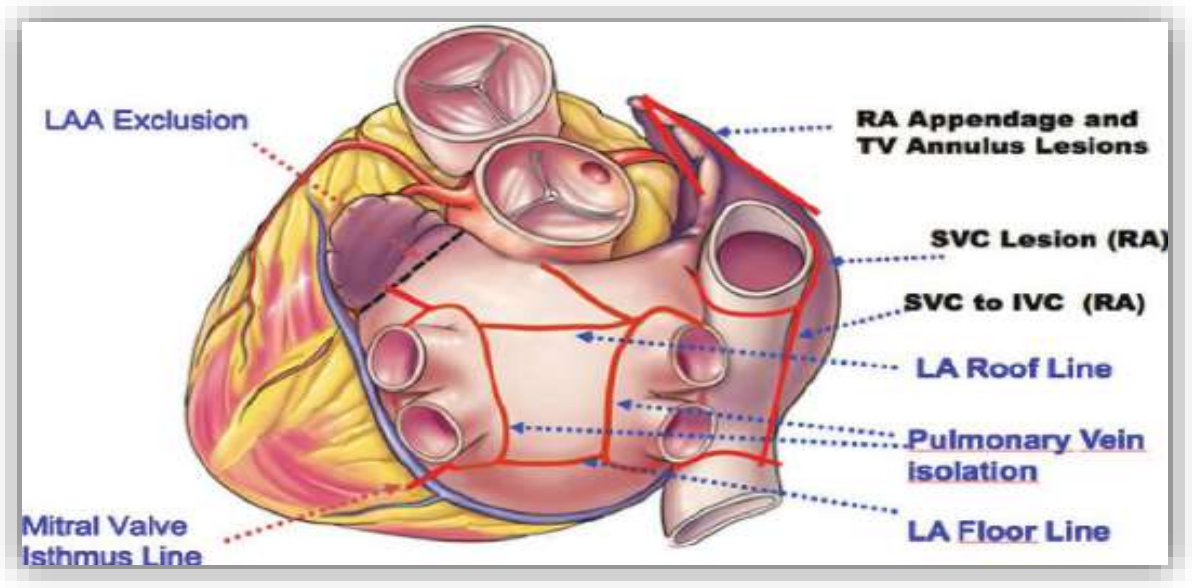
- Yes
- No



SEQ. #: 4244
Long Name: Atrial Afibrillation - Left Atrial Lesion - Method
Short Name: AFibLeftAtrialLesMeth
Definition - Indicate the types of Left Atrial lesions. If more than one lesion was made, select all that apply.

Intent/Clarification:

Pulmonary Vein Isolation - Indicate whether the AFib lesion was pulmonary vein isolation. Pulmonary vein ablation is a treatment for atrial fibrillation in which both the left and right pulmonary veins are ablated. Unilateral pulmonary vein isolation and bilateral pulmonary vein isolation are captured here. When this is performed as the primary procedure, this is often performed with epicardial bipolar radiofrequency and commonly without opening the left atrium.



Posterior Box Lesion - Indicate whether the AFib lesion was a box lesion. Box lesion can be performed as the only procedure on the left atrium in isolation. This includes encircling all four pulmonary veins with a inferior pulmonary vein connecting lesion, and a superior pulmonary vein connecting lesion (LA Roof line and LA Floor line). This is often performed with cryoablation. If performed with bipolar radiofrequency, the connection between the right and left sets of pulmonary veins may often be referred to as “inferior pulmonary vein connecting lesion” or “superior pulmonary vein connecting lesion”. If the operative report says, “completion box lesion” and involves pulmonary vein isolation, inferior pulmonary vein connecting lesion, and a superior pulmonary vein connecting lesion, and then code pulmonary vein isolation and Box lesion.

Mitral Line – Posterior Mitral Annular Line - This important lesion can be performed solely with cryo. When performed correctly, it is accompanied by a separately performed and documented epicardial coronary sinus lesion on the epicardial surface directly opposite to this endocardial mitral line and thus the two may appear contiguously in the operative report. In some centers, it may be performed as part of the inferior pulmonary vein connecting lesion with a bend of the cryo proble to include the

posterior Mitral Annulus lesion. If performed with bipolar RF or cut-and-sew, then a focal cryo Mitral Annular Lesion to Posterior Mitral Annulus lesion is required.

Left atrial appendage line - This completion line connects the left inferior pulmonary vein to the left atrial appendage (LAA) and it is most often performed together with the inferior pulmonary vein connecting lesion, often with cryo. It may also be performed in conjunction with the epicardial resection of the LAA with bipolar radiofrequency.

Epicardial Coronary Sinus Lesion - Indicate whether the Afib lesion was a Coronary Sinus Lesion. This is an epicardial lesion only and is most often performed with cryo and it often accompanies the separately performed and documented endocardial posterior mitral annular line lesion.

Epicardial Posterior Wall Other (i.e. Convergent procedure) - The surgical component of the Convergent procedure completed by a Cardiothoracic Surgeon is captured in the Afib section as primarily epicardial and Epicardial Posterior Wall Other. Note, this is not a MAZE procedure and it does not have any of the traditional aforementioned lesions and it is thus documented by a single field only. When this procedure is performed, no other left atrial or right atrial lesions are applicable.

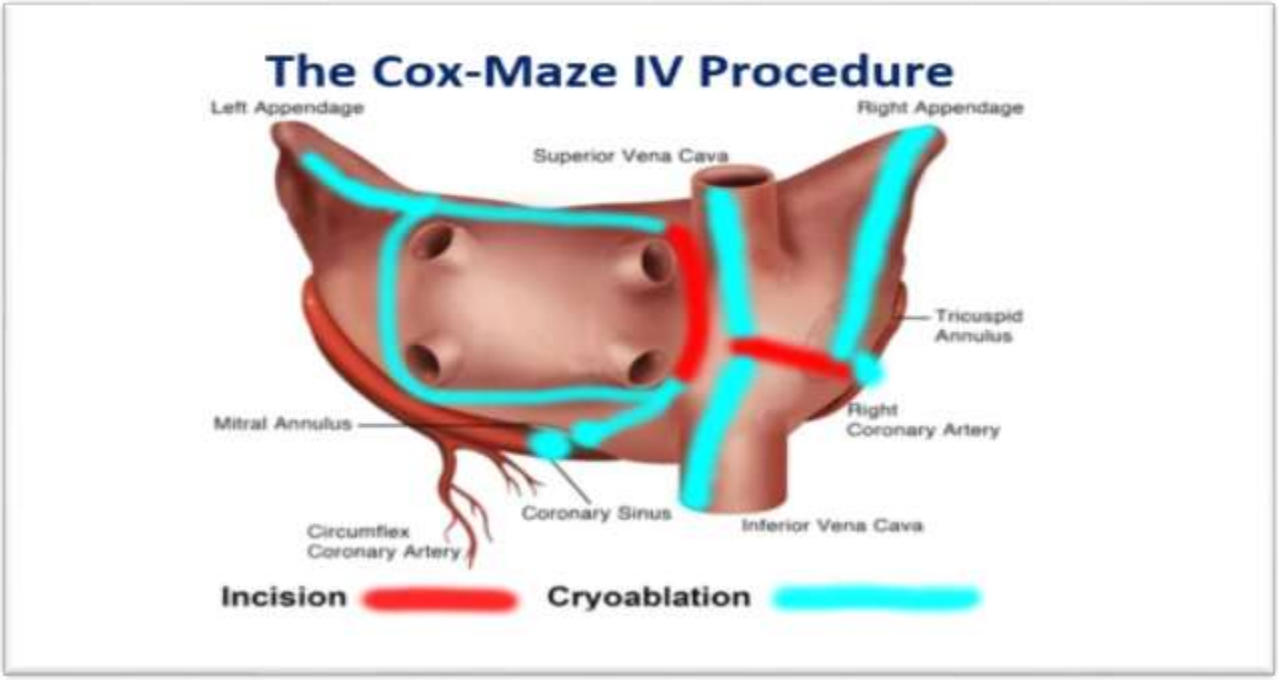
Other

SEQ. #: 4246
Long Name: Atrial Afibrillation - Right Atrial Lesion
Short Name: AFibRtAtrialLes

Definition - Indicate if Right Atrial lesions were performed.

Intent/Clarification:

- Yes
- No

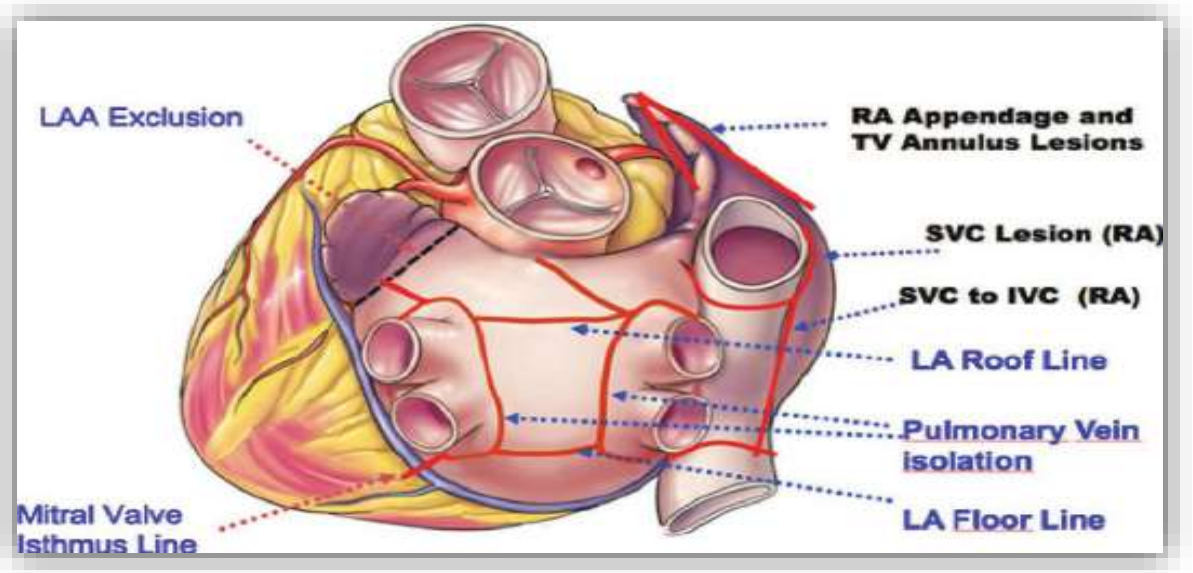


SEQ. #: 4248
Long Name: Atrial Afibrillation - Right Atrial Lesion - Method
Short Name: AFibRtAtrialLesMeth
Definition - Indicate the types of Right Atrial lesions. If more than one lesion was made, select all that apply.

Intent/Clarification:

SVC Line - Indicate whether the AFib lesion was an SVC Line. The term “intercaval line” may be used when describing both the SVC line and the IVC line together. The inter-caval line is an important lesion and it can be completed by any of the methods. It may be done by a single incision with the full cut-and-sew technique. Most commonly, this is performed separately by the bipolar RF clamp or cryo device as two separate lesions.

IVC Line - Indicate whether the AFib lesion was an IVC Line. The term “intercaval line” may be used when describing both the SVC line and the IVC line together. The inter-caval line is an important lesion and it can be completed by any of the methods. It may be done by a single incision with the full cut-and-sew technique. Most commonly, this is performed separately by the bipolar RF clamp or cryo device as two separate lesions.



Tricuspid Completion Line – This describes the completion of the RA vertical line (incision) to the anterior tricuspid annulus. The vertical RA line is often the primary incision in the RA and the tricuspid completion line is often completed with endocardial cryo. However, some centers may perform an older variation to this lesion, and it might include the following descriptions, particularly if the incision in the atrial was not made vertically but tangentially:

- Tricuspid Annulus ('T' lesion). The T-lesion is a vertical line or incision is on the lateral wall of the RA and may be completed with cryo or RF but may be performed by a surgical incision.
- Tricuspid Cryo Lesion, Medial lesion. This is the same thing as described above but worded differently. It connects the RA incision to the tricuspid annulus and may often be worded as the “medial tricuspid annular completion line”.

Verticle Right Atrial Line – This represents the lesion from the inter-caval line on the lateral vertical free wall of the RA. It is most commonly performed as the primary incision to access the RA for the full bi-atrial MAZE lesion set. The Tricuspid Completion Line completes this incision to the tricuspid annulus. In some circumstances, this lesion may be completed epicardially with cryo or a bipolar clamp. It is important to note that the reason the vertical atrial line is preferred over a tangential incision (e.g. from the RAA to near the IVC) is that the mid right atrial body has SA nodal tissue, and if interrupted it may result in a junctional rhythm.

Right Atrial Appendage Line – In the full bi-atrial MAZE lesion set, this is an important lesion to interrupt abnormal electrical signals that may arise from the RAA, called rotors. This is performed by a line that often goes from the tip of the RAA to either the RA vertical line or tricuspid annulus. This may be performed with endocardial cryo either anteriorly or medially. It may also be performed with a bipolar clamp either through the tip of the RAA or from the atriotomy to the tip of the RAA. Other descriptions may include:

- RAA Lateral Wall (Short) lesion. This lesion often is performed epicardially or with a bipolar RF clamp inserted in the RAA and combined with the Tricuspid Annular Line to RAA lesion.

- RAA Lateral Wall to “T” lesion. This lesion is often performed with a bipolar RF clamp or cryo and extends into the tip of the RAA.
- Tricuspid Annular Line to RAA lesion. This is a variant of RAA Lateral Wall to “T” lesion. Usually Tricuspid Annular Line to RAA lesion and the RAA Lateral Wall to “T” lesion are not performed together as they do the same thing.

Other

Aorta and Aortic Root Procedures

GENERAL INFORMATION:

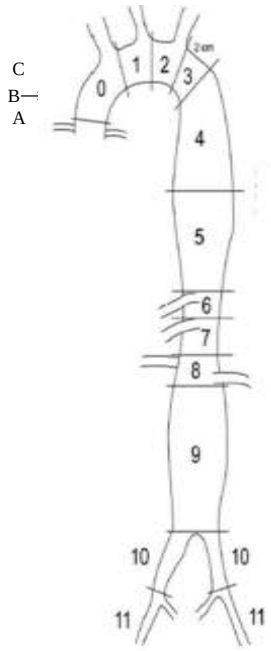
Data Managers should collaborate with the Surgeon to complete this section. If you are unable to obtain an answer then it is better to leave answers blank than to guess.

Aorta punch holes used to sew the proximal anastomosis to the aorta are not captured as an aorta procedure.

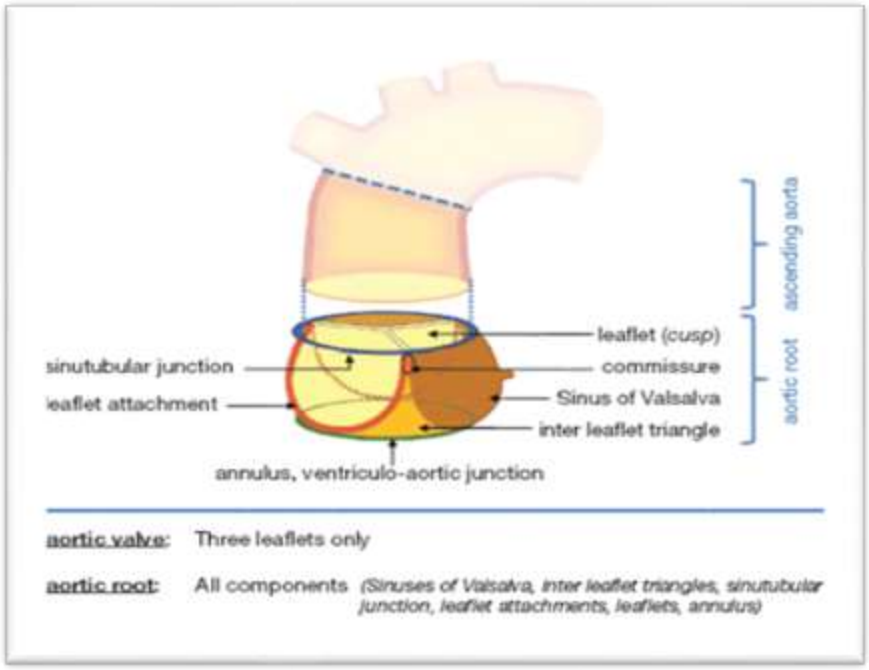
Do not code Aortic Root Procedure when the surgeon performs an aortic valve procedure and a concomitant annular enlargement with no other aortic root procedure performed. Annular enlargement is often required for aortic valve procedures and do not constitute a procedure on the aorta. This procedure is coded in Section K-1: Aortic Valve Section Seq 3460.

Do not capture isolated abdominal aortic aneurysm/dissections. This is identified as procedures where the most proximal portion of the procedure involves the celiac artery.

Please use the following diagrams for reference in section M2



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Use the following table only as a guide to the anatomical location of zones. **Please verify with your surgeon the proximal and distal locations using zones, do not assume.** For example, do not assume that the procedure was performed in Zone 2 if you surgeon states it was an “Arch” procedure. You will need to verify with your surgeon if it was Zone 1, 2, or 3.

Root/Ascending	Zone 0 (A) - Below STJ Zone 0 (B) - STJ – Midascending Zone 0 (C) - Midascending – distal ascending
Arch	Zone 1 Zone 2 Zone 3

Descending	Zone 4 Zone 5
Thoracoabdominal	Zone 6 Zone 7 Zone 8 Zone 9 Zone 10 Zone 11
Dissections: Stanford Type A	Starts in zone 0 – verify with your surgeon what section of zone 0
Dissections: Stanford Type B	Starts in zone 3 - verify with your surgeon for the proximal and distal zones
Dissections: Non-A or non-B	Starts in zone 1 or zone 2 and is less common – verify with your surgeon for the proximal and distal zones

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SEQ. #: 4500
Long Name: Family History of Disease Of The Aorta
Short Name: FamHistAorta
Definition: Indicate whether there is a family history of disease of the aorta

Intent/Clarification: For the purposes of this database (and published guidelines), family history means any alive or dead first-degree relative ('FDR': sibling, parent, child) with either a thoracic aortic aneurysm (include 'dilated' or 'enlarged' aorta), or aortic dissection/rupture. Half-siblings are considered second-degree relatives and will not be coded as family history of first degree / direct blood relatives.

Note: Abdominal aneurysms should be excluded, as they are typically not familial in nature. Thoracic location is sometimes described as 'near' or 'above' the heart, or 'in the chest'.

Note: For this database, in the case of family history of an unexplained death of a first-degree family member select 'unknown'.

Note: Patients with a family history of thoracic aneurysm (especially with a history of dissection/rupture) who require aortic surgery, may have more fragile aortic tissue or require a more extensive procedure, which could affect procedural outcomes.

SEQ. #: 4505
Long Name: Patient's Genetic History
Short Name: PatGenHist
Definition: Indicate the genetic history of the patient

Intent/Clarification: Indicate whether or not the patient has a history of any of the well-known, genetically triggered thoracic aortic conditions listed below. The condition must be documented in the medical record and the diagnosis made by clinical or genetic testing.

- Marfan

- Ehlers-Danlos
- Loeys-Dietz
- Non-Specific familial thoracic aortic syndrome-patients in whom another family member(s) had thoracic aneurysm, but no specific gene mutation was identified when tested.
- Aortic Valve Morphology-variant AV morphology (bicuspid, unicuspid, quadricuspid).
- Turner syndrome
- Other - Patient has been told they have a relevant gene mutation related to thoracic aneurysm but did not match any of the choices listed above; these will include known pathogenic mutations familiar to specialists but not associated with a 'named' syndrome like the other choices.
- Unknown - No known syndromic/genetic diagnosis but has not specifically been tested for pathogenic mutations.
- None - Patient has undergone genetic testing with no positive findings.

SEQ. #: 4510
Long Name: Prior Aortic Intervention
Short Name: PriorAorta
Definition: Indicate whether the patient had prior aortic intervention

Intent/Clarification: Includes both open surgical and/or endovascular (stent) intervention of any part of the aorta.

- Yes
- No
- Unknown

SEQ. #: 4520
Long Name: Prior Aortic Intervention - Previous Repair - Root (Zone 0 - A)
Short Name: PriorRepRoot
Definition: Indicate whether the prior intervention involved the aortic root

Intent/Clarification: The aortic root is the 'sinus' segment of the aorta that immediately exits the heart and contains the aortic valve and coronary artery origins. It ends anatomically at the sinotubular junction where the tubular ascending aorta begins. The region of the aorta designated in zone 0 section from the below the sinotubular junction (from the annulus to the coronary).

SEQ. #: 4521
Long Name: Prior Aortic Intervention - Previous Repair Type - Root (Zone 0 - A)
Short Name: PriorRepTyRoot
Definition: Indicate the type of prior root repair

Intent/Clarification: In this location, surgery would either name aortic root replacement as well as designations of 'mechanical' or biological', also called "Bentall" procedures and also includes 'valve-sparing' root procedures ("David", "Re-implantation", "Yacoub", "Remodeling", "Florida Sleeve).

Note: Currently, the only applicable choice for root repair type is open – **Update July 2020 - the other choices in the selction set were added in the event endovascular root procedures started.**

SEQ. #: 4522
Long Name: Prior Aortic Intervention - Repair Failure - Root (Zone 0 - A)
Short Name: PriorFailRoot
Definition: Indicate whether there is failure of the prior root repair

Intent/Clarification: Either a secondary 'false' pseudo-aneurysm has developed in or near the previous aortic root repair, or a portion of preserved aortic root tissue (typically the coronary origins or 'buttons') has become aneurysmal.
There are four areas of prior root failure. These include proximal, distal and right coronary and left coronary button suture line issues.

SEQ. #: 4523
Long Name: Prior Aortic Intervention - Disease Progression - Root (Zone 0 - A)
Short Name: PriorProgRoot
Definition: Indicate whether there is progression of disease following the prior root repair

Intent/Clarification: If only a portion of the aortic root (typically the non-coronary sinus) was replaced during the initial root procedure, aneurysmal progression of the left and or right coronary sinuses may have occurred. Development of coronary button aneurysms would also be considered progression of disease.

SEQ. #: 4525
Long Name: Prior Aortic Intervention - Previous Repair - Ascending (Zone 0 - B&C)
Short Name: PriorRepAsc
Definition: Indicate whether the prior intervention involved the ascending aorta

Intent/Clarification: The region of the aorta designated in zone 0 section B and/or C. Zone 0 section B is the sinotubular junction to mid ascending (from the coronary to the distal margin of the right pulmonary artery). Zone 0 section C is the mid ascending to distal ascending (from the right pulmonary artery to the innominate artery).
The ascending aorta is also called the tubular ascending segment and is the portion above the aortic root ('sinus segment') beginning at the sinotubular junction and extending to the first aortic arch vessel (innominate or brachiocephalic artery).

SEQ. #: 4526
Long Name: Prior Aortic Intervention - Previous Repair Type - Ascending (Zone 0 - B&C)
Short Name: PriorRepTyAsc
Definition: Indicate the type of prior ascending aorta repair

Intent/Clarification: Most simply classified as ascending aortic replacement with a prosthetic graft, it also includes ascending aortic resection (removal of the aneurysm with end-to-end proximal and distal aortic connection) and aortoplasty (reduction of the diameter of the ascending aorta with sutures or by removing a longitudinal segment).

SEQ. #: 4527
Long Name: Prior Aortic Intervention - Repair Failure - Ascending (Zone 0 - B&C)
Short Name: PriorFailAsc
Definition: Indicate whether there is failure of the prior ascending repair

Intent/Clarification: A situation where there has been a previous replacement or aortoplasty of the (tubular) ascending aortic segment and the patient has manifested a pseudo-aneurysm, further aortic expansion, and/or contained rupture of the proximal or distal suture line. The region of the aorta designated in zone 0 from the sinotubular junction to distal ascending aorta.

SEQ. #: 4528
Long Name: Prior Aortic Intervention - Disease Progression - Ascending (Zone 0 - B&C)
Short Name: PriorProgAsc
Definition: Indicate whether there is progression of disease following the prior ascending aorta repair

Intent/Clarification: A situation could arise where the ascending aorta was previously replaced with a tube graft, but a small segment of the ascending aorta (usually the ascending to proximal arch transition) was not removed, has subsequently become aneurysmal, and now requires intervention. Another scenario is if an ascending (reduction) aortoplasty was employed as the previous repair and this segment has become aneurysmal to an extent requiring intervention.

SEQ. #: 4530
Long Name: Prior Aortic Intervention - Previous Repair - Arch (Zones 1,2,3)
Short Name: PriorRepArch
Definition: Indicate whether the prior intervention involved the aortic arch

Intent/Clarification: The aortic arch is the segment of aorta beyond the tubular ascending segment, beginning at the level of the first branching vessel of the aorta (typically the innominate or brachiocephalic artery) and terminating just after the last branch vessel of the aortic arch (left subclavian artery), before transitioning to the descending thoracic aorta; specifically zones 1, 2 and 3. The region of the aorta

designated in zones 1, 2, & 3 from the distal ascending to the proximal descending thoracic aorta.

SEQ. #: 4531
Long Name: Prior Aortic Intervention - Previous Repair Type - Arch (Zones 1,2,3)
Short Name: PriorRepTyArch
Definition: Indicate the type of prior arch repair

Intent/Clarification: Open arch repairs may include ‘hemi-arch’ repairs, where branch arteries are not re-implanted or bypassed, and extent of arch replacement with a graft includes a significant portion of the lesser curve (non-branched portion) of the aortic arch, as well as ‘total’ arch replacement (all branch vessels re-implanted or bypassed in addition to graft replacement of the aorta), or ‘partial’ arch replacement (one or more, but not all arch vessels re-implanted or replaced in addition to graft replacement of a portion the aortic arch). Additionally, ‘hybrid’ repairs may combine surgical bypasses to one or more arch vessels with endograft (stent) repair of the aortic arch, and total endovascular arch replacement (rare) includes endovascular perfusion of arch vessels using special techniques.

SEQ. #: 4532
Long Name: Prior Aortic Intervention - Repair Failure - Arch (Zones 1,2,3)
Short Name: PriorFailArch
Definition: Indicate whether there is failure of the prior arch repair

Intent/Clarification: Relates to pseudo-aneurysms that have formed as part of arch repair, or failure of an endograft to ‘seal’ with an endoleak leading to further aortic expansion. Could also indicate a bypassed or re-implanted arch vessel failure that requires a later re-intervention.

An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 4533

Long Name: Prior Aortic Intervention - Disease Progression - Arch (Zones 1,2,3)
Short Name: PriorProgArch
Definition: Indicate whether there is progression of disease following the prior arch repair

Intent/Clarification: Cases of partial arch replacement or hemi-arch aortic replacement where the residual aortic arch has become aneurysmal to an extent requiring re-intervention, or a re-implanted branch vessel has become aneurysmal requiring intervention.

SEQ. #: 4535
Long Name: Prior Aortic Intervention - Previous Repair - Descending (Zones 4,5)

Short Name: PriorRepDesc
Definition: Indicate whether the prior intervention involved the descending aorta

Intent/Clarification: The descending thoracic aorta begins after the aortic arch (beyond the left subclavian artery) and extends to the level of the aortic hiatus at the diaphragm. The region of the aorta designated in zones 4 & 5 is distal arch to the celiac arteries.

SEQ. #: 4536
Long Name: Prior Aortic Intervention - Previous Repair Type - Descending (Zones 4,5)
Short Name: PriorRepTyDesc
Definition: Indicate the type of prior descending aorta repair

Intent/Clarification: The descending thoracic aorta can be replaced with a tube graft (open surgical) or using endovascular (stent) repair. Hybrid repairs include the use of an ‘elephant trunk’ extension of an aortic arch repair and secondary open surgical or endograft connection to the elephant trunk extension.

SEQ. #: 4537
Long Name: Prior Aortic Intervention - Repair Failure - Descending (Zones 4,5)
Short Name: PriorFailDesc
Definition: Indicate whether there is failure of the prior descending repair

Intent/Clarification: Formation of pseudo-aneurysm or failure of an endograft repair to ‘seal’ or an endoleak causing aneurysm expansion at the site of previous treatment.

An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 4538
Long Name: Prior Aortic Intervention - Disease Progression - Descending (Zones 4,5)
Short Name: PriorProgDesc
Definition: Indicate whether there is progression of disease following the prior descending aorta repair

Intent/Clarification: A situation where a segment of the descending thoracic aorta was previously replaced, and an adjacent non-replaced segment has expanded to an extent requiring a new intervention. Also, a pre-emptive elephant trunk extension was created at the time of a previous arch repair, and the descending thoracic aorta has become large enough to complete treatment.

SEQ. #: 4540
Long Name: Prior Aortic Intervention - Previous Repair - Suprarenal Abdominal (Zones 6,7)
Short Name: PriorRepSupraAb
Definition: Indicate whether the prior intervention involved the suprarenal abdominal aorta

Intent/Clarification: The segment of aorta beginning at the level of the diaphragm and ending just below the renal artery branches. This segment includes major branches to the abdominal organs, including the celiac and superior mesenteric artery, but not the inferior mesenteric artery. The region of the aorta designated in zone 6 & 7 is from the celiac to the renal arteries.

SEQ. #: 4541

L**ong Name:** Prior Aortic Intervention - Previous Repair Type - Suprarenal Abdominal (Zones 6,7)

Short Name: PriorRepTySupraAb

Definition: Indicate the type of prior suprarenal abdominal aorta repair

Intent/Clarification: Like the aortic arch, when this segment is replaced either with open surgery or with endovascular (stent) grafting, the major vessels require either re-implantation or bypass.

SEQ. #: 4542

Long Name: Prior Aortic Intervention - Repair Failure - Suprarenal Abdominal (Zones 6,7)

Short Name: PriorFailSupraAb

Definition: Indicate whether there is failure of the prior suprarenal abdominal repair

Intent/Clarification: This includes pseudo-aneurysms as well as failure of endograft ‘seal’ or endoleak causing continued expansion of the aorta requiring another intervention. Additionally, stenosis or occlusion of a bypassed or re-implanted visceral vessel indicates a repair failure that could mandate a re-intervention.

An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 4543

Long Name: Prior Aortic Intervention - Disease Progression - Suprarenal Abdominal (Zones 6,7)

Short Name: PriorProgSupraAb

Definition: Indicate whether there is progression of disease following the prior suprarenal abdominal aorta repair

Intent/Clarification: If a portion of the supra-renal aorta was not replaced during the initial surgery (most typically proximally, near the diaphragm, during open surgery), aneurysm progression in this location could occur, requiring another intervention. Aneurysm formation of the proximal portions of the visceral vessels themselves could also occur (more likely in genetic aneurysm syndromes) and require re-intervention as well.

SEQ. #: 4545
Long Name: Prior Aortic Intervention - Previous Repair - Infrarenal Abdominal (Zones 8,9,10,11)
Short Name: PriorRepInfraAb
Definition: Indicate whether the prior intervention involved the infrarenal abdominal aorta

Intent/Clarification: This is the segment of aorta below the renal arteries and terminating just before the bifurcation of the aorta into the common iliac arteries.
The region of the aorta designated in zone 8, 9, 10, 11 is the infrarenal abdominal aorta.

SEQ. #: 4546
Long Name: Prior Aortic Intervention - Previous Repair Type - Infrarenal Abdominal (Zones 8,9,10,11)
Short Name: PriorRepTyInfraAb
Definition: Indicate the type of prior infrarenal abdominal aorta repair

Intent/Clarification: The infra-renal aorta can be replaced either with open surgery or endovascular (stent) graft repair. The endovascular (stent) graft repair usually involves a graft from the kidneys and branching graft into the common iliac arteries.

SEQ. #: 4547
Long Name: Prior Aortic Intervention - Repair Failure - Infrarenal Abdominal (Zones 8,9,10,11)
Short Name: PriorFailInfraAb
Definition: Indicate whether there is failure of the prior infrarenal abdominal repair

Intent/Clarification: This includes pseudo-aneurysms as well as failure of endograft ‘seal’ or endoleak causing continued expansion of the aorta requiring another intervention.

An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 4548
Long Name: Prior Aortic Intervention - Disease Progression - Infrarenal Abdominal (Zones 8,9,10,11)
Short Name: PriorProgInfraAb
Definition: Indicate whether there is progression of disease following the prior infrarenal abdominal aorta repair

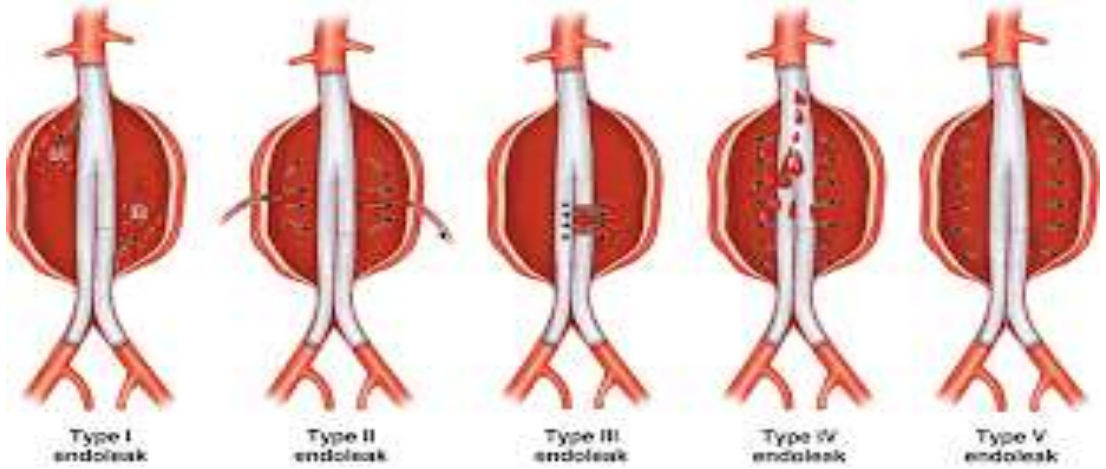
Intent/Clarification: A situation where a segment of infra-renal aorta was left behind or un-treated during a previous procedure and has now become aneurysmal to an extent requiring re-intervention.

SEQ. #: 4620
Long Name: Current Procedure with Endoleak involvement
Short Name: Endoleak
Definition: Indicate if current procedure is with endoleak involvement.

Intent/Clarification: An endoleak is defined as the presence of blood leaking through or around an endograft into the aneurysm sac resulting in perfusion and persistent pressurization of the aneurysm sac. It is the most common complication after endovascular aneurysm repair. In the case of an aortic dissection, an endoleak refers to persistent false lumen perfusion. The intent is to identify the efficacy of the procedure with the optimal therapy resulting in the absence of any endoleak.

SEQ. #: 4625
Long Name: Endoleak - Type I - Leak At Graft Attachment Site
Short Name: EndoleakTypeI
Definition: Indicate whether endoleak is type I

Intent/Clarification: The intent is to identify the presence of a Type I endoleak. A Type I endoleak is defined as leakage of blood around a graft at the proximal or distal seal zones. This is a result of a gap between the aortic wall and the endograft at either the proximal or distal seal zone.



SEQ. #: 4630
Long Name: Endoleak - Type I - Location
Short Name: EndoleakTyILoc
Definition: Indicate the location of the type I endoleak

Intent/Clarification: The intent is to identify the location of the Type I endoleak.

- Ia-Proximal - A Type Ia endoleak is defined as a leak occurring at the proximal seal zone.
- Ib-Distal - A Type Ib endoleak is defined as a leak occurring at the distal seal zone.
- Ic-Iliac occluder - Type Ic endoleak is defined as a non-occluded iliac artery in patients with an aorto-uni-iliac device with a patent femoral-femoral bypass.

SEQ. #: 4635
Long Name: Endoleak - Type II - Aneurysm Sac Filling Via Branch Vessel
Short Name: EndoleakTypeII
Definition: Indicate whether endoleak is type II

Intent/Clarification: The intent is to identify the presence of a Type II endoleak. A Type II endoleak is defined as retrograde filling of the aneurysm sac or false lumen in the case of dissection by aortic branch vessels (e.g. left subclavian artery, intercostal arteries, etc.).

SEQ. #: 4640
Long Name: Endoleak - Type II - Number Of Vessels
Short Name: EndoleakVessNum
Definition: Indicate the number of vessels involved in the type II endoleak

Intent/Clarification: The intent is to identify the number of vessels providing retrograde flow into the aneurysm sac or false lumen.

- IIa-Single vessel - A Type IIa endoleak is defined as one branch vessel with retrograde flow causing an endoleak.

- IIb-Two vessels or more - A Type IIb endoleak is defined as more than one branch vessel with retrograde flow causing an endoleak.

SEQ. #: 4645
Long Name: Endoleak - Type III - Leak Through Defect In Graft
Short Name: EndoleakTypeIII
Definition: Indicate whether endoleak is type III

Intent/Clarification: The intent is to identify the presence of a Type III endoleak. A Type III endoleak is defined as leakage of blood into the aneurysm sac, or false lumen in the case of dissection, due to either a gap between separate endograft components, or a defect in the fabric of the graft secondary to graft strut fracture or erosion.

SEQ. #: 4650
Long Name: Endoleak - Type III - Graft Defect Type
Short Name: EndoleakType
Definition: Indicate the graft defect type

Intent/Clarification: The intent is to identify which type of Type III endograft exists.

- IIIa - Junctional separation of modular components - A Type IIIa defect (junctional separation of modular components) occurs when an endoleak occurs secondary to junctional separation of overlapping endografts.

- IIIb - Endograft fractures or holes - A Type IIIb defect (endograft fracture or

holes) occurs when an endoleak occurs secondary to a perforation in the fabric of an endograft secondary to graft strut fracture or erosion.

SEQ. #: 4655
Long Name: Endoleak - Type IV - Leak Through Graft Fabric - Porosity
Short Name: EndoleakTypeIV
Definition: Indicate whether endoleak is type IV

Intent/Clarification: The intent is to identify the presence of a Type IV endoleak. A Type IV endoleak is defined as the presence of an endoleak secondary to graft porosity. **All other types of endoleaks must be definitively ruled out prior to selecting this diagnosis.**

SEQ. #: 4660
Long Name: Endoleak - Type V - Endotension-Expansion Aneurysm Sac Without Leak
Short Name: EndoleakTypeV
Definition: Indicate whether endoleak is type V

Intent/Clarification: The intent is to identify the presence of a Type V endoleak. A Type V endoleak, also known as endotension, is defined as persistent aneurysm expansion in the absence of a confirmed endoleak.

SEQ. #: 4665
Long Name: Current Procedure with Aorta Infection
Short Name: Infection
Definition: Indicate if current procedure is with infection.

Intent/Clarification: The intent is to establish the presence of a primary aortic infection (either native aorta or prosthetic graft). This can be prospectively established preoperatively with diagnostic cultures (i.e. perigraft fluid or phlegmon aspiration) or other imaging such (tagged WBC scan or characteristic MRI or CT changes). The final diagnosis should depend on surgeon report, intraoperative cultures and pathologic data.

SEQ. #: 4670
Long Name: Aorta Infection Type
Short Name: InfecType
Definition: Indicate the type of aortic infection

Intent/Clarification: Intent is to establish the type / involvement of infection within the aorta including the sinus of Valsalva and the aortic valve. Infection may involve native tissues or prosthetic graft or prosthetic valve material.

- Graft infection
- Valvular endocarditis
- Nonvalvular endocarditis

- Native aorta
- Multiple infection types - Multiples infection types might be described as involving more than one type, i.e. graft and native aorta.

SEQ. #: 4675
Long Name: Current Procedure with Trauma
Short Name: Trauma
Definition: Indicate if current procedure is with trauma.

Intent/Clarification: Indicate whether there was aortic trauma. Aortic trauma will include blunt trauma (i.e. blunt aortic injury in motor vehicle accident), penetrating trauma (i.e. gun shot, stabbing, etc.), and iatrogenic trauma (i.e. endovascular catheter induced perforation or dissection, may include catheter trauma.).

Do not include surgical induced trauma in this field.

SEQ. #: 4676
Long Name: Aortic Trauma - Location
Short Name: AorticTraumaLoc
Definition – Indicate the location of the aorta where trauma occurred. If more than one location of trauma, select all that apply.

Intent/Clarification:

- Root - aortic trauma involved the root. Includes the sinus of Valsalva, aortic valve leaflets and aortoventricular junction.
- Ascending - aortic trauma involved the ascending aorta. Location of trauma sinotubular junction to the innominate artery.
- Arch - aortic trauma involved the arch. Location of trauma proximal aspect of the innominate artery to the distal aspect of the left subclavian artery/aortic isthmus.
- Descending - the aortic trauma involved the descending aorta. Location of trauma aorta distal to the left subclavian to the diaphragmatic hiatus.
- Thoracoabdominal - aortic trauma involved the thoracoabdominal aorta. Location of trauma includes parts of the descending thoracic aorta and abdominal aorta.
- Abdominal - the aortic trauma involved the abdominal aorta. Location of trauma includes parts of the descending thoracic aorta and abdominal aorta. Trauma isolated to infra-diaphragmatic abdominal aorta.

SEQ. #: 4710

Long Name: Aorta Presentation

Short Name: Presentation
Definition: Indicate the clinical presentation

Intent/Clarification: This is intended to define the presenting symptoms that lead to the diagnosis and operative intervention and might include: Pain, CHF, Cardiac Arrest, Syncope, Infection, Asymptomatic, Injury related to surgical complication, Neuro Deficit, or Other symptoms.

There is no specific hierarchy and the primary presentation should be indicated by the surgeon.

SEQ. #: 4711
Long Name: Aorta Presentation - Neuro Deficit
Short Name: AortPresNeuroDef
Definition - Indicate the type of neuro deficits the patient presented with. Timeframe is from admission to OR entry.

Intent/Clarification: This is a select one choice. Select the most severe neuro deficit.

- Stroke
- Limb numbness
- Paralysis
- Hoarseness (acute vocal cord dysfunction)

SEQ. #: 4712
Long Name: Aorta Primary indication
Short Name: Prim Indic
Definition: Indicate the primary indication for intervention

Intent/Clarification: The intent is to identify the condition/diagnosis/pathology for which surgery is being conducted and may include:

- Aneurysm - may include a penetrating ulcer
- Dissection
- Other

There is no specific hierarchy and the primary presentation should be indicated by the surgeon.

SEQ. #: 4720

Long Name: Aneurysm - Etiology

Short Name: AnEtilogy
Definition: Indicate the aneurysm etiology

Intent/Clarification:

- Atherosclerosis - Arteriosclerotic aneurysm an aneurysm as a result of weakening of the wall in severe atherosclerosis
- Infection - Primary infection of native artery resulting in aneurysm
- Inflammatory - refers to an autoimmune disease - Ehlers Danlos
- Connective Tissue/Syndromic Disorder - refers to Marfans, etc.
- Ulcerative Plaque/Penetrating Ulcer
- Pseudoaneurysm - is an outpouching that does not involve all layers of the aortic wall.
- Mycotic - refers to a native tissue infection
- Traumatic transection
- Intercostal visceral patch - an intercostal patch aneurysm was defined as a pseudoaneurysm along the intercostal patch anastomotic suture line. Intercostal patch aneurysms are a complication of the sparing of intercostal arteries during thoracic aneurysm repair.
- Anastomotic site
- Aortic Valve Morphology – Variants of aortic valve morphology – bicuspid, unicuspid, quadricuspid
- Chronic Dissection
- Unknown/Other – includes etiology documentation of systemic hypertension, degenerative, and post stenotic dilatation related aneurysm

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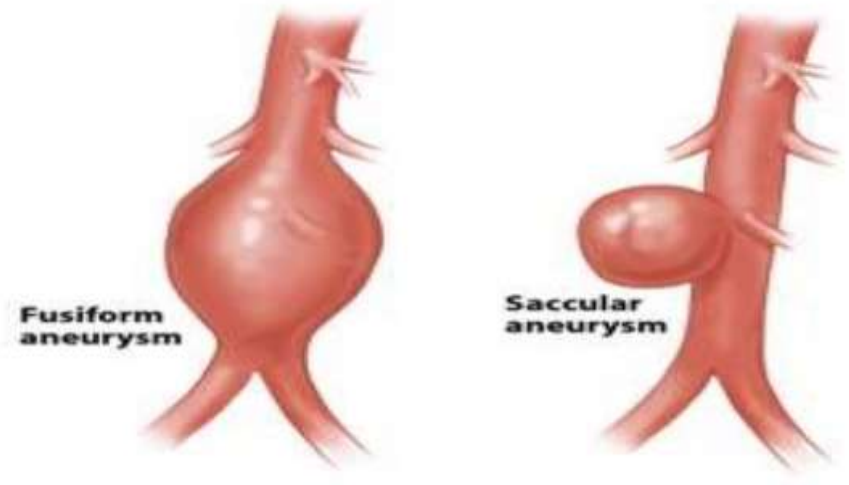
SEQ. #: 4725

Long Name: Aneurysm - Type
Short Name: AnType
Definition: Indicate the aneurysm type

Intent/Clarification:

- Fusiform aneurysm is a diffuse dilation of all layers of the aortic wall involving an extended segment
- Saccular aneurysm is a focal dilation of all layers of the aorta.
- Unknown

Most aneurysms tend to be fusiform. Saccular aneurysms would be dictated as such.



SEQ. #: 4730
Long Name: Aneurysm - Rupture
Short Name: AnRupt
Definition: Indicate whether the aneurysm ruptured

Intent/Clarification: Aneurysm rupture is a complete breakdown in the integrity of the aortic wall and if not “contained” will result in exsanguination.

SEQ. #: 4735
Long Name: Aneurysm - Rupture - Contained
Short Name: AnRuptCon
Definition: Indicate whether the rupture was contained

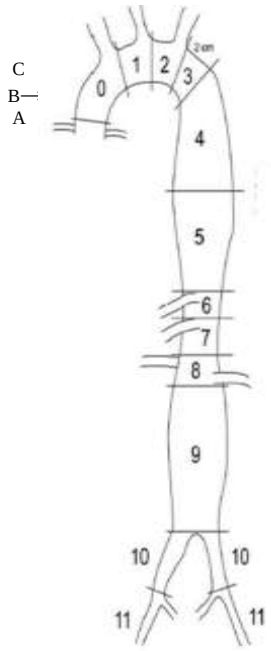
Intent/Clarification: Contained rupture is a complete breakdown in the integrity of the aortic wall but is being “contained” by some clot or another structure. It is an unstable situation. When seen on CT scan, it is almost always “contained” as frank rupture is usually fatal.

SEQ. #: 4740
Long Name: Aneurysm - Location
Short Name: AnLoc
Definition: Indicate the location of the maximum diameter of the aneurysm.

Intent/Clarification: STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta and is marked as Zone 0. This includes everything from above the aortic root to the innominate artery, i.e.: both the aortic root and ascending aorta.

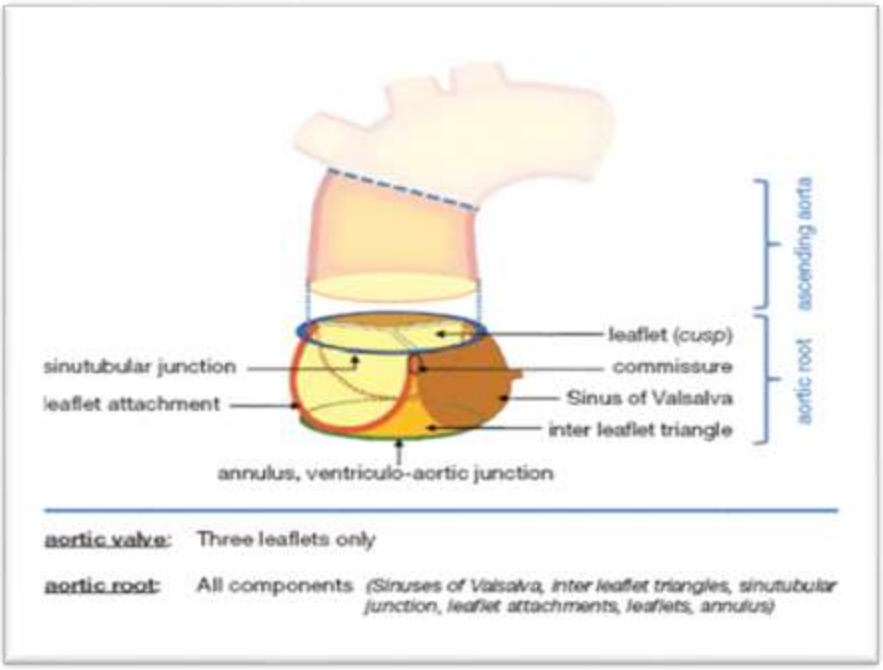
There is no specific hierarchy. Choose the primary zone of maximum diameter indicated by the surgeon.

If the aneurysm spans more than one zone, code the most proximal zone with the largest diameter.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery).

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4745
Long Name: Dissection - Timing
Short Name: DisTiming
Definition: Indicate the timing of the aortic dissection

Intent/Clarification: The intent is to define the time interval from occurrence of dissection until presentation of the patient. The best assessment of dissection is the onset of symptoms. Usually found either in the EMS report or history of present illness on the H&P, record the time from first onset of pain until the patient is evaluated for treatment.

- Hyperacute (<24 hours)
- Acute (>= 24 hours, <2 weeks)
- Subacute (>= 2 weeks, <90 days)
- Chronic (>=90 days)
- Acute on chronic
- Unknown - Report “unknown” ONLY if the patient cannot describe a specific onset of symptoms.

SEQ. #: 4746
Long Name: Dissection Onset Date Known
Short Name: DisOnsetDtKnown
Definition: Indicate whether the date of dissection onset is known

Intent/Clarification: The intent is to confirm the duration of symptoms preceding the patient’s evaluation for treatment. While dissection timing (seq 4745) describes fairly broad intervals, this sequence refers to the patient’s recall of specific date when symptoms were first felt. Typical symptoms include sudden onset of pain which is usually memorable. Report “no” ONLY for any patient whose dissection is incidentally discovered or if the patient does not recall the onset of pain.

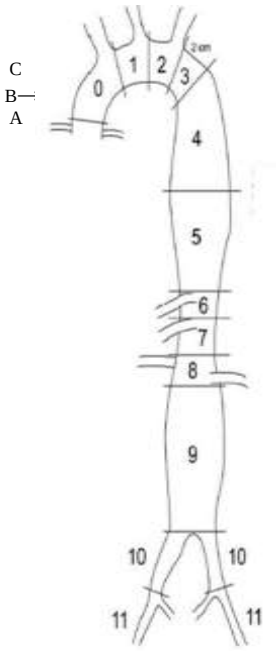
For patients who have a chronic dissection following a previous repair, code the previous date of surgery as the timing for onset.

SEQ. #: 4747
Long Name: Dissection Onset Date
Short Name: DisOnsetDt
Definition: Indicate dissection onset date

Intent/Clarification: Report the date of symptoms onset if it is known by the patient. If the patient’s recall is non-specific (e.g. “sometime last week”) leave this item blank. Use 8-digit format (mm/dd/yyyy).

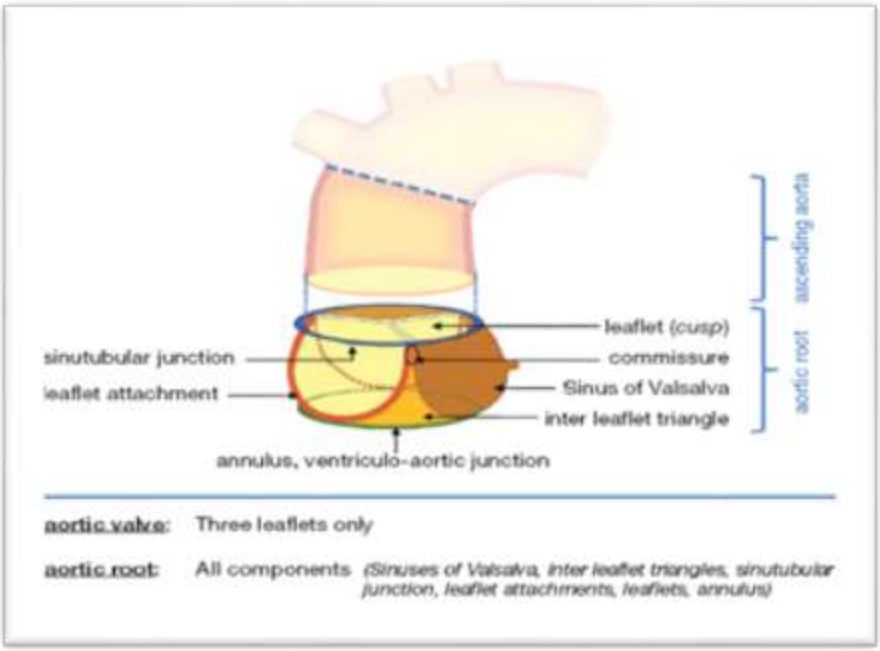
SEQ. #: 4750
Long Name: Dissection - Primary Tear Location
Short Name: DisTearLoc
Definition: Indicate location of the primary tear

Intent/Clarification: The intent is to identify the primary entry tear for the dissection. As most dissections include multiple re-entry tears it may be difficult to confirm the primary site and the surgeon MUST be the final arbiter of this definition. This is the site identified by the surgeon at an open operation or judged by the surgeon from imaging as the primary site to be covered by endovascular stent. If the radiology report names a primary entry point and the surgeon concurs, report this location.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

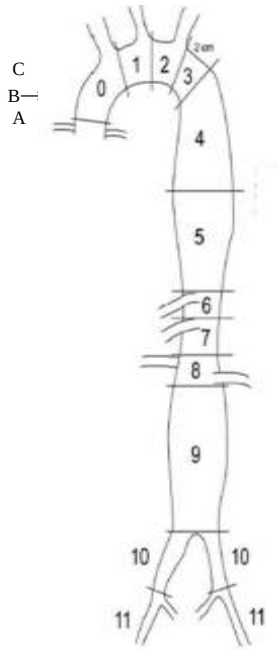
SEQ. #: 4760
Long Name: Proximal Dissection Extent Known
Short Name: DisRetExt
Definition: Indicate if proximal (toward heart) dissection extent is known.

Intent/Clarification: The intent is to determine whether the dissection propagates proximal (toward the aortic valve) from the primary tear location. Report yes if imaging indicates an extension of the false lumen proximal (toward the aortic valve) to the primary tear location.

SEQ. #: 4765
Long Name: Most Proximal Dissection Location
Short Name: DisRetLoc
Definition: Indicate location of most proximal (closest to heart) dissection location.

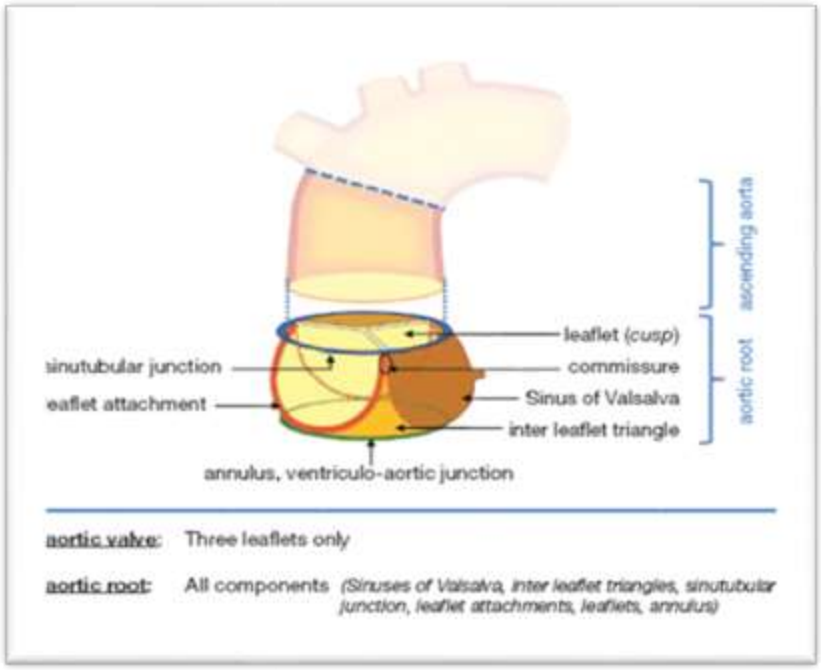
Intent/Clarification: The intent is to define how far the retrograde dissection extends toward the aortic valve. This would be the point at which the false lumen comes closest to the aortic valve. The surgeon or radiologist can be the final arbiter of this definition. Refer to the image showing the zones and note that zone “0” is subdivided into 3 sections:

A. Below sinotubular junction
B. Sinotubular junction to mid ascending aorta
C. Mid ascending to distal ascending (at the innominate artery)



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

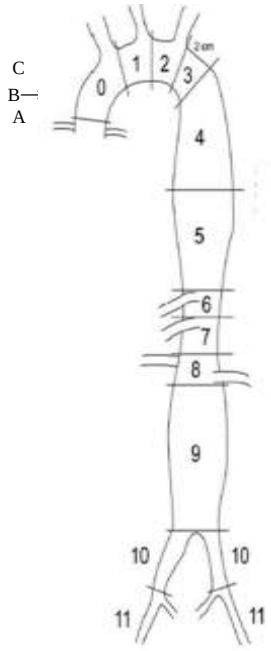
- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4775
Long Name: Distal Dissection Extent Known
Short Name: DistalExt
Definition: Indicate if distal (away from heart) dissection is known.

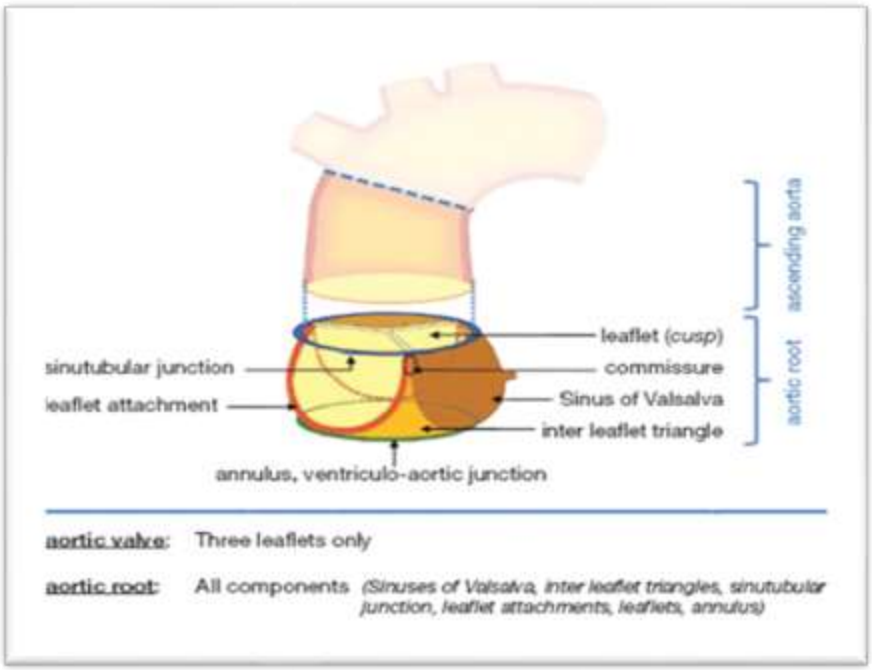
Intent/Clarification: The intent is to identify where distal (antegrade) dissection occurred or extended.

SEQ. #: 4780
Long Name: Distal Dissection Extension Location
Short Name: DistalExtLoc
Definition: Indicate location of most distal (away from heart) dissection location

Intent/Clarification: The intent is to define the how far along the aorta (away from the valve) any new or extended dissection goes. Refer to the image showing the zones and report the most distal (highest # zone) extent of false lumen.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

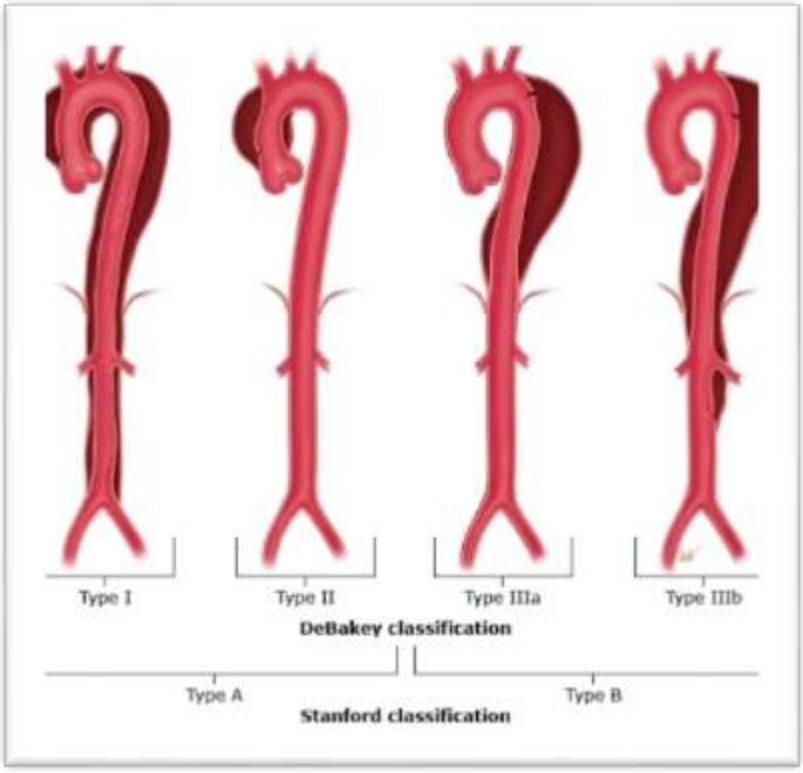
SEQ. #: 4781
Long Name: Stanford Classification Known
Short Name: StanfordClass
Definition - Indicate if the Stanford classification is known.

Intent/Clarification: Stanford Type A extends proximal to the left subclavian artery. Stanford Type B extends distal to the left subclavian artery. The Stanford classification is useful as it follows clinical practice, as type A ascending aortic dissections generally require primary surgical treatment whereas type B dissections generally are treated medically as initial treatment with surgery reserved for any complications.

- Type A – Stanford Type A is a dissection that starts in Zone 0. The dissection involves the ascending aorta, the aortic arch, or, more rarely, in the descending aorta. It includes DeBakey types I and II.
- Type B – Stanford Type B starts in Zone 3. The dissection involves the descending aorta or the arch (distal to the left subclavian artery), without

involvement of the ascending aorta. It includes DeBakey type III.

- Unknown
- Other – Zone 1 and Zone 2 dissections are less common and typically referred to non-A, non-B dissections.



SEQ. #: 4782
Long Name: Retrograde dissection caused by Aortic Stent Graft (Post TEVAR)
Short Name: DisPosTEVAR
Definition: Indicate if there was a proximal dissection (toward the heart) caused by an aortic stent graft (post TEVAR).

Intent/Clarification: The intent is to identify whether RETROGRADE dissection occurred or extended during TEVAR (Thoracic Endovascular Aortic Repair)
Report yes if:

A. Retrograde dissection is noted on post TEVAR imaging that was not present on imaging before TEVAR

OR

B. Retrograde dissection (false lumen) extends closer to the aortic valve than was noted on pre TEVAR imaging

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SEQ. #: 4783
Long Name: Patient within 30 days post TAVR
Short Name: PtLess30PostTAVR
Definition - Indicate if the patient had a TAVR within the last 30 days.

Intent/Clarification: This field is not meant to specify that the TAVR is the reason for current procedure.

- Yes
- No
- Unknown

SEQ. #: 4784
Long Name: Patient within 30 days Post Other Cath Procedure
Short Name: PtLess30PostOthCath
Definition - Indicate if the patient had any catheter based procedure, other than TAVR, within the last 30 days.

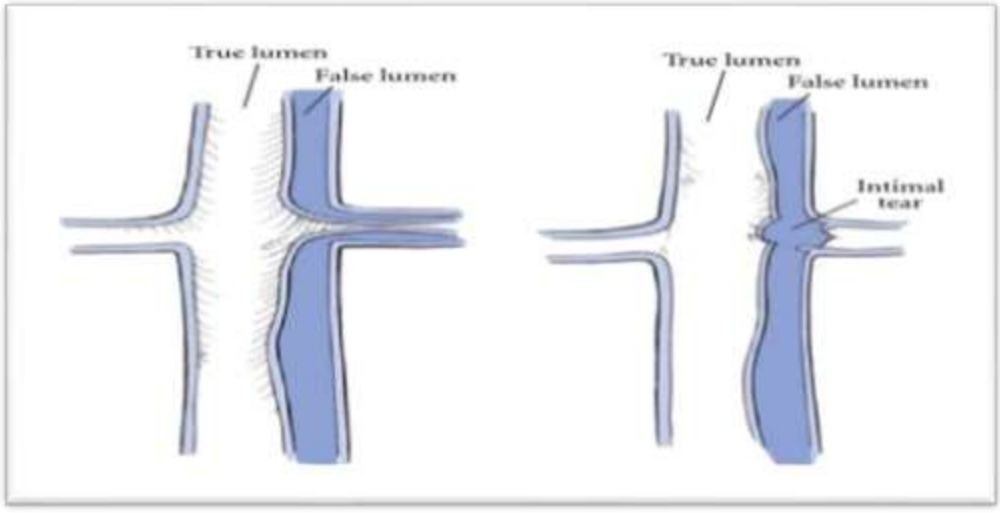
Intent/Clarification: This field is not meant to specify that the catheter-based procedure is the reason for current procedure.

- Yes
- No
- Unknown

SEQ. #: 4785
Long Name: Dissection - Malperfusion
Short Name: DisMal
Definition: Indicate whether malperfusion was present

Intent/Clarification: Malperfusion is defined as inadequate blood flow to a tissue bed. The intent is to identify whether there is compromised blood flow to any branch vessel because of the dissection or repair. Radiology report or the surgeon's evaluation may be used to define this.

- Yes - If any vessel has compromised blood flow report "yes".
- No
- Unknown - code "unknown" if the surgeon or radiologist indicate that the imaging is inadequate to confirm the presence or absence of malperfusion.



SEQ. #: 4786
Long Name: Dissection - Malperfusion Type
Short Name: DisMalType
Definition - Indicate where malperfusion occurred. If malperfusion occurred in more than one location, select all that apply.

Intent/Clarification: The intent is to identify which vessels have compromised flow because of the dissection or repair. **The surgeon is the final arbiter of this definition.**

- Coronary - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND any coronary blood flow is compromised report yes.
- Right Common Carotid - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND right common carotid blood flow is compromised report yes.
- Left Subclavian - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND left subclavian blood flow is compromised report yes.
- Superior Mesenteric - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND superior mesenteric blood flow is compromised report yes.
- Renal, right - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND left renal blood flow is compromised report yes.
- Spinal - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND any spinal artery blood flow is compromised report yes.
- Right subclavian - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND right subclavian blood flow is compromised report yes.
- Left Common Carotid - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND left common carotid blood flow is compromised report yes.
- Celiac - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND celiac blood flow is compromised report yes.
- Renal, left - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND left renal blood flow is compromised report yes.
- Iliofemoral - If the answer to Dissection – malperfusion (sequence 4785) is “yes” AND either or both iliofemoral systems blood flow is compromised report yes.

SEQ. #: 4836

Long Name: Dissection - Lower Extremity Motor Function

Short Name: DisLowMotFun

Definition: Indicate if any NEW motor deficit of either lower extremity was present preoperatively.

Intent/Clarification: The intent is to identify if any NEW motor deficit of either lower extremity is a presenting symptom. This is preoperative status and does not include new post-operative paralysis or paraplegia.

This is intended to capture new sensory-motor deficit due to vascular malperfusion and not due to post-operative complication.

SEQ. #: 4837
Long Name: Dissection - Lower Extremity Sensory Deficit
Short Name: DisLowSenDef
Definition: Indicate if any NEW sensory deficit of either lower extremity was present preoperatively.

Intent/Clarification: The intent is to identify any NEW sensory deficit of either lower extremity is present following dissection. Report “yes” if any note comments on numbness or insensate areas that were not recorded in the past medical history. Only report “unknown” if there is no comment in the medical record regarding sensation in the lower extremities.

This is preoperative status and does not include post-operative paralysis or paraplegia.

SEQ. #: 4840
Long Name: Dissection - Rupture
Short Name: DisRupt
Definition: Indicate whether dissection ruptured

Intent/Clarification: Report **“**yes” if any volume of blood is extravascular (outside the aortic adventitial layer), i.e. beyond the outmost layer of the aortic wall.

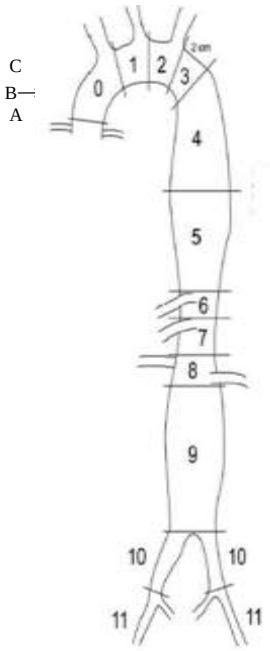
SEQ. #: 4845
Long Name: Dissection - Rupture - Contained
Short Name: DisRuptCon
Definition: Indicate whether the rupture was contained.

Intent/Clarification: Report “yes” if extravascular blood is contained by surrounding structures such that bleeding has stopped.

SEQ. #: 4850
Long Name: Dissection - Rupture Location
Short Name: DisRuptLoc
Definition: Indicate the rupture location

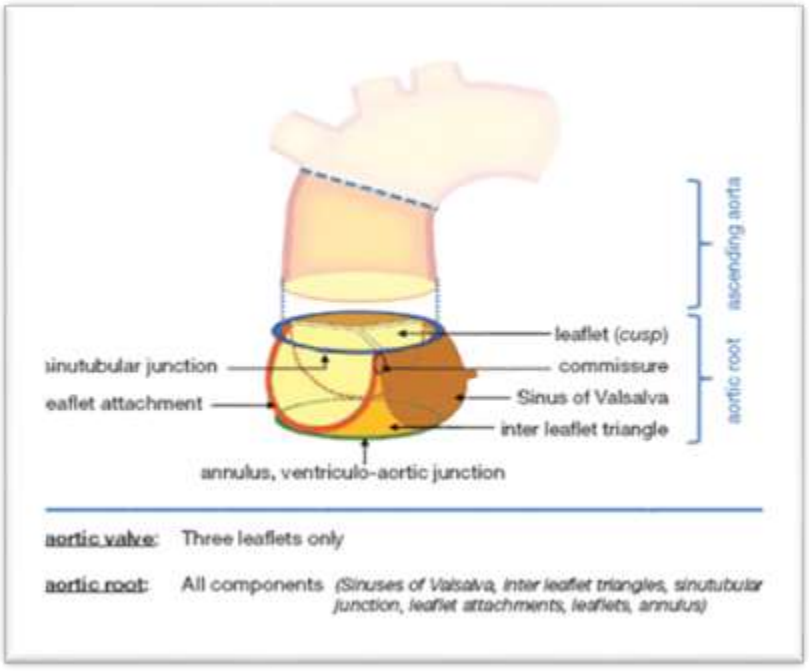
Intent/Clarification: Intent is to identify where the rupture occurred. This is the site identified by the surgeon at an open operation or judged by the surgeon or radiologist from imaging as the rupture site to be covered by endovascular stent. Refer to the image showing the zones and note that zone “0” is subdivided into 3 sections:

A. Below sinotubular junction
B. Sinotubular junction to mid ascending aorta
C. Mid ascending to distal ascending (at the innominate artery)



D. A. Below sinotubular junction
E. B. Sinotubular junction to mid ascending
F. C. Mid ascending to distal ascending
G. D. Zone 1 (between innominate and left carotid)
H. E. Zone 2 (between left carotid and left subclavian)
I. F. Zone 3 (first 2 cm. distal to left subclavian)
J. G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
K. H. Zone 5 (mid descending aorta to celiac)
L. I. Zone 6 (celiac to superior mesenteric)
M. J. Zone 7 (superior mesenteric to renals)
N. K. Zone 8 (renal to infra-renal abdominal aorta)
O. L. Zone 9 (infrarenal abdominal aorta)
P. M. Zone 10 (common iliac)

Q. N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4851

Long Name: Aorta Primary Indication - Other
Short Name: PrimIndicOther
Definition: Indicate the patient's primary indication for Aorta surgery other than Aneurysm or Dissection

Intent/Clarification:

- Valvular Dysfunction

- Stenosis/Obstruction

- Intramural Hematoma - is when there is blood in the wall of the aorta, but no dissection flap is visualized.

- Coarctation Aortic - is a narrowing of the aorta and usually a congenital issue.

- Endoleak - is a persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

- Infection

- Injury related to surgical complication/perforation – The intent is to capture intra-op surgical trauma to the aorta during the current procedure.

- Trauma - Aortic trauma will include blunt trauma (i.e. blunt aortic injury in motor vehicle accident), penetrating trauma (i.e. gun shot, stabbing, etc.), and iatrogenic trauma (i.e. endovascular catheter induced perforation or dissection, may include catheter trauma).

SEQ. #: 4855
Long Name: Root - Aorto-Annular Ectasia
Short Name: RootAAnnEctasia
Definition: Indicate whether aorto annular ectasia is present

Intent/Clarification: Annuloaortic ectasia refers to dilatation of the aortic root involving the annulus and/or the sinuses and/or the sinotubular junction and typically giving rise to

aortic insufficiency. The intent of capturing this field is to identify patients with aortic root dilatation specifically that impacts aortic valvular function.

SEQ. #: 4870
Long Name: Root - Asymmetric Root Dilatation
Short Name: RootDilaAsym
Definition: Indicate whether asymmetric root dilatation is present

Intent/Clarification: Asymmetric root dilatation refers to predominance of dilatation present in one or two sinus segments as opposed to more uniform root dilatation involving all 3 sinus segments (these may often be associated with aortic insufficiency).

The intent of this field is to determine the relative frequency of asymmetric sinus dilatation and its relationship to other clinical manifestations (e.g. aortic insufficiency or aortic dissection) as opposed to more uniform root dilatation.

SEQ. #: 4875
Long Name: Root - Asymmetric Root Dilatation - Location
Short Name: RoottDilaAsym
Definition: Indicate location of asymmetric root dilatation

Intent/Clarification: The intent is to clarify left, right or non-coronary aortic root dilatation.

SEQ. #: 4878
Long Name: Root - Sinus Of Valsalva Aneurysm
Short Name: RootSinus
Definition: Indicate whether there is a Sinus of Valsalva (SOV) aneurysm

Intent/Clarification: Sinus Of Valsalva Aneurysm (SOV) aneurysm specifically refers to distinct dilatation of a single sinus segment, i.e. does not involve a second sinus segment as would be the case with “asymmetric root dilatation”. The intent of this field is to identify the frequency of distinct sinus segment aneurysms as opposed to other root pathologies.

SEQ. #: 4880
Long Name: Root - Sinus of Valsalva Aneurysm – Multi Location
Short Name: RootSinusLocMult
Definition: Indicate locations of Sinus of Valsalva aneurysm

Intent/Clarification: The intent is to clarify left, right or non-coronary Sinus of Valsalva aneurysm. Select all that apply.

SEQ. #: 4881
Long Name: Arch Anomalies
Short Name: ArchAnom

Definition: Indicate whether arch anomalies are present

Intent/Clarification:

- Yes
- No

SEQ. #: 4882
Long Name: Arch Anomalies Type
Short Name: ArchAnomTy
Definition: Indicate which arch anomalies are present. If there are multiple arch anomalies, choose all that apply.

Intent/Clarification:

- Arch Type Right - A right arch implies that the aortic arch travels around (anteriorly) to the right mainstem bronchus and right pulmonary artery and then passes posterior to the trachea.

- Aberrant Right Subclavian - An aberrant right subclavian artery is any artery that does not emanate from the innominate artery (these are typically associated with left arch anatomy).

- Kommerell/Ductus Bulge - Kommerell's diverticulum - This is not a true diverticulum but a remnant of the left fourth aortic arch and is a bulbous dilatation at the origin of the left subclavian artery. It is often associated with other arch anomalies.

- Variant vertebral origin - This refers to any vertebral artery that emanates directly from the aortic arch rather than a branch of either subclavian artery.

- Aberrant Left Subclavian - An aberrant left subclavian is any left subclavian that does not emanate from the distal arch as a separate ostium sequential and distal to the takeoff of the left common carotid artery on the greater curvature of the aortic arch.

- Bovine - This entity refers to a common origin of both the innominate artery and the left common carotid artery as they emanate from the greater curve of the arch.

SEQ. #: 4889
Long Name: Patent Internal Mammary Artery Bypass Graft
Short Name: ArchPatIMA
Definition: Indicate whether there is a patent internal mammary bypass graft present

Intent/Clarification: Patent internal mammary artery bypass graft: this refers specifically to a patient who has undergone prior CABG and has a patent internal mammary graft (either left or right) present.

- Yes

- No
- N/A

SEQ. #: 4891
Long Name: Ascending Asymmetric Dilation
Short Name: AscAsymDil
Definition: Indicate whether there is asymmetric dilatation of the ascending aorta

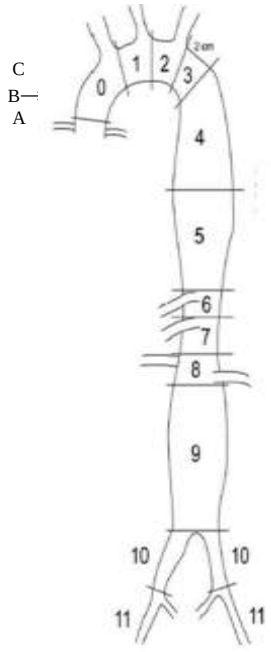
Intent/Clarification: Asymmetric dilatation refers to non-uniform dilatation of the aorta distal to the sinotubular junction, as is often noted as a pattern of dilation that affects the greater curvature of the ascending aorta.

SEQ. #: 4892
Long Name: Ascending Proximal Coronary Bypass Grafts
Short Name: AscProxGr
Definition: Indicate whether proximal bypass grafts are present on the aorta

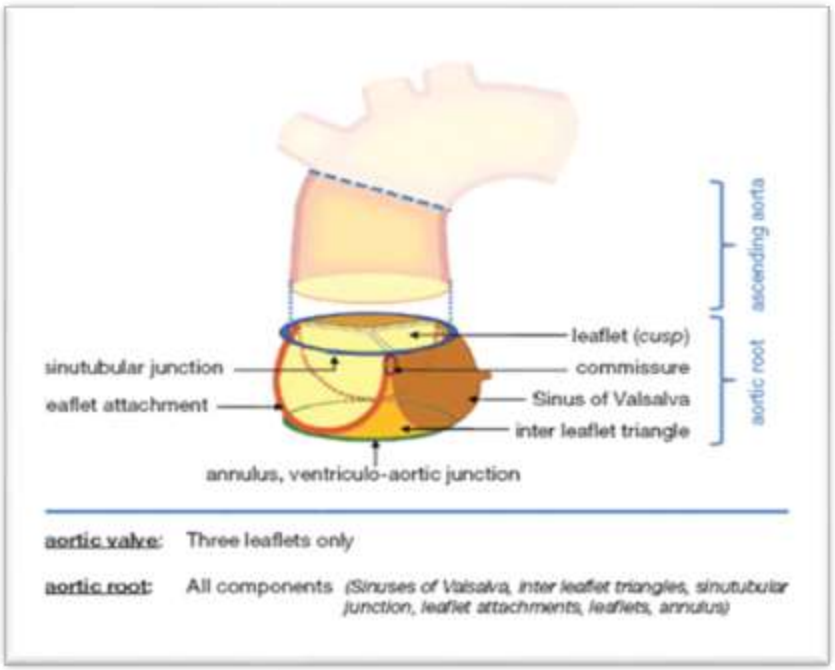
Intent/Clarification: These refer to any saphenous vein graft, radial artery or free internal mammary artery graft that emanates from the ascending aorta.

SEQ. #: 4926
Long Name: Treated Zone with the Largest Diameter
Short Name: TrtZnLrgDiam
Definition: Indicate the treated zone with the largest diameter.

Intent/Clarification:



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4927
Long Name: Treated Zone with the Largest Diameter - Measurement
Short Name: TrtZnLrgDiamMeas
Definition: Indicate the size of the largest diameter of the treated zone. Measurement to be recorded in millimeters (mm).

Intent/Clarification: Record dimension in millimeters (mm). If reported in centimeters you will need to convert. Example 5.3cm = 53mm.

Timeframe - capture results closest and prior to OR Entry, within 1 year of OR date.

If the diameter measurement is not included in the surgeon dictation or the available in studies, the field should be left blank.

SEQ. #: 4928
Long Name: Treated Zone with the Largest Diameter – Method Obtained
Short Name: TrtZnLrgDiamMeasMeth
Definition: Indicate the method used to obtain the recorded size. See Intent/Clarification section for directions if more than one source is available.

Intent/Clarification: Timeframe - capture results closest and prior to OR entry, within 1 year of OR date.

The data manager should not use the measurements from the PACs (Picture Archiving and Communication System) unless the measurements are supported by documentation from the surgeon. It is not the intention of the STS that the data manager should interpret the measurements.

- 3D or 4D Reconstruction
- PreOp CT
- PreOp MRI
- PreOp Echo
- Intra Operatively

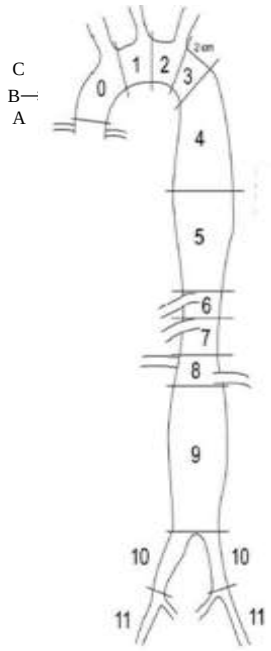
SEQ. #: 4929
Long Name: Proximal to Treated Zone(s) (Largest Diameter) Available
Short Name: ProxTreatZoneAvail
Definition: Indicate if a measurement is available on the zone proximal (closest to the heart) to treated area.

Intent/Clarification: This is the zone right before the treated section.

- Yes
- No

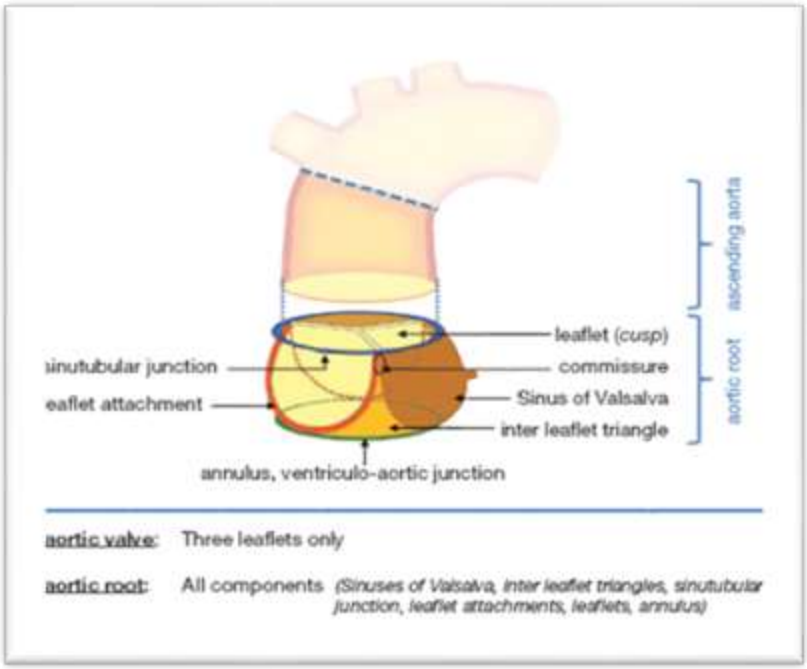
SEQ. #: 4930
Long Name: Proximal to Treated Zone(s) (Largest Diameter) Available - Location
Short Name: ProxTreatZoneAvailLoc
Definition: Indicate the zone proximal (closest to the heart) to the treated zone(s)

Intent/Clarification: This is the zone right before the treated section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4931
Long Name: Proximal to Treated Zone(s) (Largest Diameter) Available - Measurement
Short Name: ProxTreatZoneAvailMeas
Definition: Indicate the largest diameter of the zone proximal (closest to the heart) to the treated zone(s). Measurement to be recorded in millimeters (mm).

Intent/Clarification: Record dimension in millimeters (mm). If reported in centimeters you will need to convert. Example 5.3cm = 53mm.

Timeframe - capture results closest and prior to OR Entry, within 1 year of OR date.

SEQ. #: 4932

Long Name: Proximal to Treated Zone(s) (Largest Diameter) - Method Obtained
Short Name: ProxTreatZoneAvailMeth
Definition: Indicate the method used to obtain the recorded size. See Intent/Clarification section for directions if more than one source is available**.**

Intent/Clarification: Timeframe - capture results closest and prior to OR entry, within 1 year of OR date.

The data manager should not use the measurements from the PACs (Picture Archiving and Communication System) unless the measurements are supported by documentation from the surgeon. It is not the intention of the STS that the data manager should interpret the measurements.

- 3D or 4D Reconstruction
- PreOp CT
- PreOp MRI
- PreOp Echo
- Intra Operatively

SEQ. #: 4933

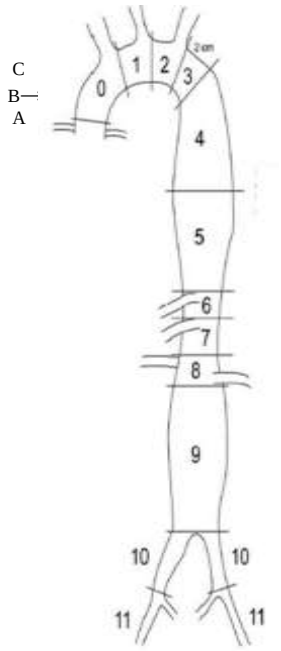
Long Name: Distal to Treated Zone(s) (Largest Diameter) Available
Short Name: DistTreatZoneAvail
Definition: Indicate if a measurement is available on the zone distal (further from the heart to treated area).

Intent/Clarification: This is the zone right after the treated section.

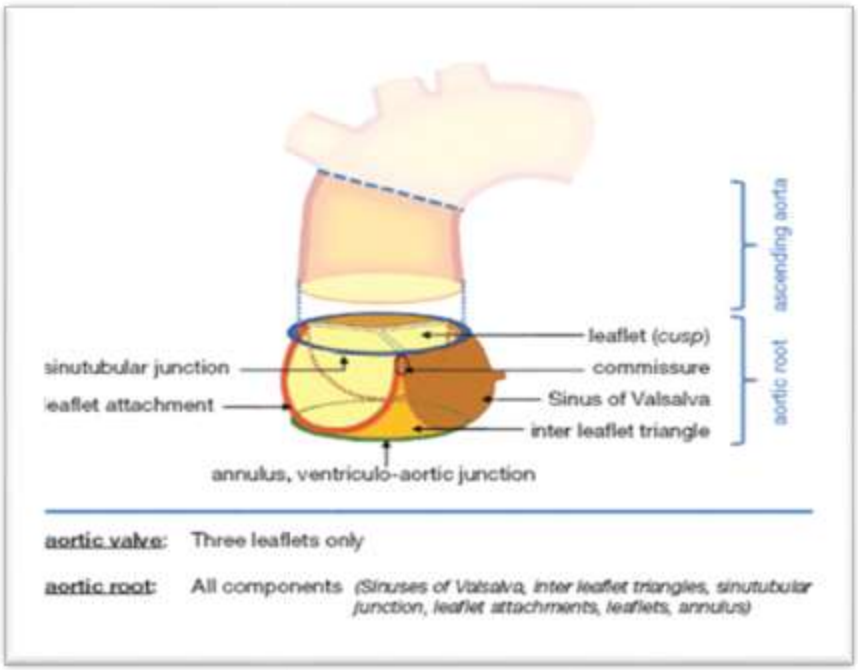
- Yes
- No

SEQ. #: 4934
Long Name: Distal to Treated Zone(s) (Largest Diameter) Available - Location
Short Name: DistTreatZoneAvailLoc
Definition: Indicate the zone distal (furthest from the heart) to the treated zone(s)

Intent/Clarification: This is the zone right after the treated section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

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- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 4935
Long Name: Distal to Treated Zone(s) (Largest Diameter) Available - Measurement
Short Name: DistTreatZoneAvailMeas
Definition: Indicate the largest diameter of the zone distal (furthest from the heart) to the treated zone(s). Measurement to be recorded in millimeters (mm).

Intent/Clarification: Record dimension in millimeters (mm). If reported in centimeters you will need to convert. Example 5.3cm = 53mm.

Timeframe - capture results closest and prior to OR entry, within 1 year of OR date

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SEQ. #: 4936

Long Name: Distal to Treated Zone(s) (Largest Diameter) - Method Obtained
Short Name: DistTreatZoneAvailMeth
Definition: Indicate the method used to obtain the recorded size. See Intent/Clarification section for directions if more than one source is available.

Intent/Clarification: Timeframe - capture results closest and prior to OR entry, within 1 year of OR date.

The data manager should not use the measurements from the PACs (**Picture Archiving and Communication System)** unless the measurements are supported by documentation from the surgeon. It is not the intention of the STS that the data manager should interpret the measurements.

- 3D or 4D Reconstruction

- PreOp CT

- PreOp MRI

- PreOp Echo

- Intra Operatively

SEQ. #: 4951

Long Name: VS-Aorta - Aortic Valve or Root Procedure Performed

Short Name: VSAVAo

Definition: Indicate if a procedure was performed on the aortic valve or aortic root.

Intent/Clarification:

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

SEQ. #: 4952
Long Name: VS-Aorta - Aortic Valve Procedure Performed
Short Name: VSAVPrAo
Definition: Indicate the procedure performed on the aortic valve.

Intent/Clarification:

- Replacement
- Repair / Reconstruction
- Surgical Prosthetic Valve Intervention (Not explant of valve)

Anterior mitral leaflet endarterectomy/decalcification is considered part of the AVR and should not be coded as a mitral valve procedure.

An aortic endarterectomy is considered part of the AVR procedure and should not be coded elsewhere.

Aortoplasty done in conjunction with AVR to reduce the size of the ascending aorta is considered part of the closure and is not coded as an additional procedure.

Aortic resection to merely remove excessive aortic tissue prior to aortoplasty is considered part of the closure and is not coded as an additional procedure.

Wrapping the dilated portion of the aorta to reinforce it does not constitute an "other or aorta" procedure when done in conjunction with an AVR.

Note - Patient had an AVR for endocarditis. The surgeon also performed unroofing of the mitral valve sub annular abscess. Don't code the unroofing of the mitral valve sub annular abscess. This is part of the AVR for endocarditis.

FAQ October 2020 – How do I code for an aortic valve sparing procedure and aortic root and ascending aorta replacement. If I code, 4952, then I have to either enter AV Replacement, AV Rrepair or Surgical Prosthetic Valve Intervention (Not explant of valve)?

Answer – Code SEQ 4951 as Yes, leave SEQ 4952 blank, then code the Root procedure in SEQ 4963.

SEQ. #: 4953

Long Name: VS-Aorta - Aortic Transcatheter Valve Replacement
Short Name: VSTCVAo
Definition: Indicate if a transcatheter aortic valve replacement was performed.

Intent/Clarification: Transcatheter Aortic Valve Replacement (TAVR) technology is designed to patients, who may not be candidates for conventional open-heart valve replacement surgery, to obtain a life-saving valve. Catheter based access is obtained through an artery.

Transcatheter devices inserted via an open approach are captured as a surgical AVR. This field is for transcatheter devices inserted via transcatheter.

If you participate in the TVT registry you may opt to submit transcatheter cases to the STS adult cardiac surgery registry in addition to the TVT registry, but it is not required. TVT cases are not analyzed.

Note: Both TAVR + TMVR done during same operative episode. This is an optional case for ACSD. Double valve should be entered if the site enters TAVR/TMVR cases into the ACSD. It will not be analyzed.

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure.

Note: While undergoing TAVR procedure, surgery was converted to open AVR. If the site usually enters TAVRs into the STS database and the patient ends up converting to SAVR(surgical AVR) then the TAVR should not be captured as the index procedure, the SAVR (surgical AVR) should be entered as the index procedure and the preoperative risk of the failed TAVR should be captured.

SEQ. #: 4954
Long Name: VS-Aorta - Transcatheter Valve Replacement Approach
Short Name: VSTCVRAo
Definition: Indicate the approach used for the transcatheter aortic valve procedure.

Intent/Clarification: TAVR devices may be implanted via multiple vascular approaches:

- Transapical
- Transaxillary
- Transfemoral

- Transaortic
- Subclavian
- Transiliac
- Transeptal
- Transcarotid
- Transcaval
- Other

SEQ. #: 4955
Long Name: VS-Aorta - Aortic Surgical Valve Replacement
Short Name: VSAVSurgRepAo
Definition: Indicate if an aortic valve surgical replacement was performed.

Intent/Clarification: An open surgical valve procedure was performed.

Anterior mitral leaflet endarterectomy/decalcification is considered part of the AVR and should not be coded as a mitral valve procedure.

An aortic endarterectomy is considered part of the AVR procedure and should not be coded elsewhere.

Aortoplasty done in conjunction with AVR to reduce the size of the ascending aorta is considered part of the closure and is not coded as an additional procedure.

Aortic resection to merely remove excessive aortic tissue prior to aortoplasty is considered part of the closure and is not coded as an additional procedure.

Wrapping the dilated portion of the aorta to reinforce it does not constitute an "other or aorta" procedure when done in conjunction with an AVR.

Note: Patient had an AVR for endocarditis. The surgeon also performed unroofing of the mitral valve sub annular abscess. Don't code the unroofing of the mitral valve sub annular abscess. This is part of the AVR for endocarditis.

SEQ. #: 4956
Long Name: VS-Aorta - Aortic Surgical Valve Replacement - Device Type
Short Name: VSAVSurgTypeAo
Definition: Indicate the type of valve implanted during the surgical aortic valve procedure.

Intent/Clarification: Accurate collection of the valve type is necessary for device longitudinal surveillance. This can be determined by the valve model number. If you are unsure check the valve manufacturer website.

Choose the device type:

- Mechanical
- Bioprosthetic

- Surgeon fashioned pericardium (Ozaki)
- Other

Update August 2020 – For Composite Valve Conduit, capture SEQ 4956 as Other. Complete SEQ 4966 and SEQ 4967 to capture the type of composite valve conduit.

SEQ. #: 4957
Long Name: VS-Aorta - Aortic Surgical Bioprosthetic Replacement - Valve Type
Short Name: VSAVSurgBioTAo
Definition: Indicate the type of bioprosthetic valve that was implanted.

Intent/Clarification: If bioprosthetic, choose valve type:
- Stented
- Stentless subcoronary valve only
- Sutureless/rapid deployment

SEQ. #: 4958
Long Name: VS-Aorta - Aortic Valve Procedure Repair Type
Short Name: AVProcRepTypeAo
Definition - Indicate the repair type of the aortic valve. If more than one repair type was performed, select all that apply.

Intent/Clarification:
- Commissural suture annuloplasty - Sometimes referred to as “subcommissural annuloplasty”. Identifies repairs involving placement of pledgeted mattress sutures across the upper portion of the commissural post to improve leaflet coaptation. These annuloplasty sutures are contained with the inside of the aorta, in contrast to the sutures for commissural resuspension.

- Leaflet plication - Repair with central plication stitches, shortening the leaflet free-edge length for the correction of leaflet prolapse. Code free margin shortening as leaflet plication.

- Leaflet commissural resuspension suture - A commissural resuspension suture is a plegeted mattress suture placed at the top end of the commissural post. The stitch is placed transmurally, so that one pledget is on the inside of the aorta and the other pledget is on the outside of the aorta. This suture has the effect of compressing all aortic layers together and is often used in repair of aortic dissections. ***Note: If this procedure is performed in conjunction with valve sparing root procedure Seq 4968, both leaflet commissural resuspension suture and valve sparing root procedure should be captured.*** **Update August 2020 - Leaflet commissural resuspension suture with replacement of the ascending aorta is not captured as a valve sparing root procedure in SEQ 4968. It is captured in SEQ 4958.**

- Leaflet free edge reinforcement - The free edge reinforcement technique is performed by using suture passed in running fashion over and over along the

entire length of the free margin. May include reinforcement (PTFE) suture.

- External suture annuloplasty - To identify placement of the annuloplasty suture outside the right/left commissure, passing the needle through the septal myocardium.

- Nodular release - Repair procedure included nodular release.

- Leaflet shaving - Leaflet shaving removing a growth

- Leaflet debridement - A debridement technique can be used to remove small leaflet lesions such as Lambl's excrescence, fibroelastomas and small calcific deposits. When tumors such as fibroelastoma or myxoma are removed, also code in seq # 4115.

- Ring annuloplasty external ring - Describes a ring sewn around the base to the annulus to reshape it and provide support. Rings may be flexible or rigid.

- Pannus/thrombus removal (Native Valve) – the aortic repair included pannus or thrombus removal. Pannus is the ingrowth of fibrous tissue into the valve apparatus. **Update Oct 2020 – may also include removal of vegetation.**

- Leaflet resection suture - Sutures places to mark the edges of the resection.

- Leaflet pericardial patch - A pericardial patch can be used to repair larger perforations in the valve leaflets

- Division of fused leaflet raphe **-** The division of the raphe. For example, the two commissures or hinge points that are fused in bicuspid valves.

- Ring annuloplasty internal ring - New type of annuloplasty ring is that is tailored to each valve's shape and is designed to be implanted directly into the aortic annulus. The HAART 300 is an example of an internal ring.

SEQ. #: 4959
Long Name: VS-Aorta - Aortic Valve Procedure Surgical Prosthetic Valve Intervention (Not Explant of Valve)
Short Name: AVSurgProsthValIntAo
Definition - Indicate what procedure was performed on a previously implanted prosthetic Aortic valve. If more than one intervention was performed, select all that apply.
Intent/Clarification: This field is not for an explant of valve.

- Repair of periprosthetic leak - Repair of a periprosthetic leak with one or more repair sutures without needing to remove the existing prosthesis.
- Removal of pannus - Pannus removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- Removal of clot - Clot or thrombus removal from surgical prosthetic valve without needing to remove the existing prosthesis.
- Other

Repair of a periprosthetic leak done via transcatheter device is not entered into the ACSD.

SEQ. #: 4960
Long Name: VS-Aorta - Aortic annular enlargement
Short Name: AnlrEnlAo
Definition: Indicate if an aortic annular enlargement was performed.

Intent/Clarification: Enlargement of the aortic annulus during aortic valve replacement permits insertion of a larger prosthetic valve or allows for optimal positioning. The enlarging procedure typically employs a patch of either pericardium or Dacron. In the classic Nicks or Manougian, the patch extends across the annulus (an aorto-annuloplasty). A patch that extends down to but not across the actual annulus (supra-annular aortoplasty) is considered a modification of the Nicks or Manougian and is coded as Nicks or Manougian, as appropriate. An aortic annular enlargement is defined as incision of the aortic annulus to enlarge the aortic orifice. Annular enlargement techniques include, but are not limited to Manougian, Konno and Nicks.

SEQ. #: 4961
Long Name: VS-Aorta - Aortic Annular Enlargement - Technique
Short Name: AnlrEnlTechAo
Definition: Indicate the technique used for aortic annular enlargement.

Intent/Clarification: Intended to capture whether a Nicks-Nunez, Manougian, Konno, Other or Unknown was performed utilizing patch material.

- Nicks-Nunez - Posterior approach for enlargement of the aortic annulus. The aortotomy is extended either through the non-coronary sinus, across the aortic ring as far as the origin of the mitral valve or by resecting the posterior commissure (between left and non-coronary cusps), stopping at the base of the base of the anterior mitral leaflet. The incision can be extended across the fibrous mitral annulus, further into the anterior mitral leaflet.

- Manougian - The aortotomy is extended into the commissure between the left and non-coronary sinuses and into the anterior mitral leaflet.

- Konno - The aortic annulus is enlarged by implantation of a patch into the incised ventricular septum. Another patch is used to close the right ventricular incision. Konno-Rastan’s should be captured as a Konno procedure.

- Other

- Unknown

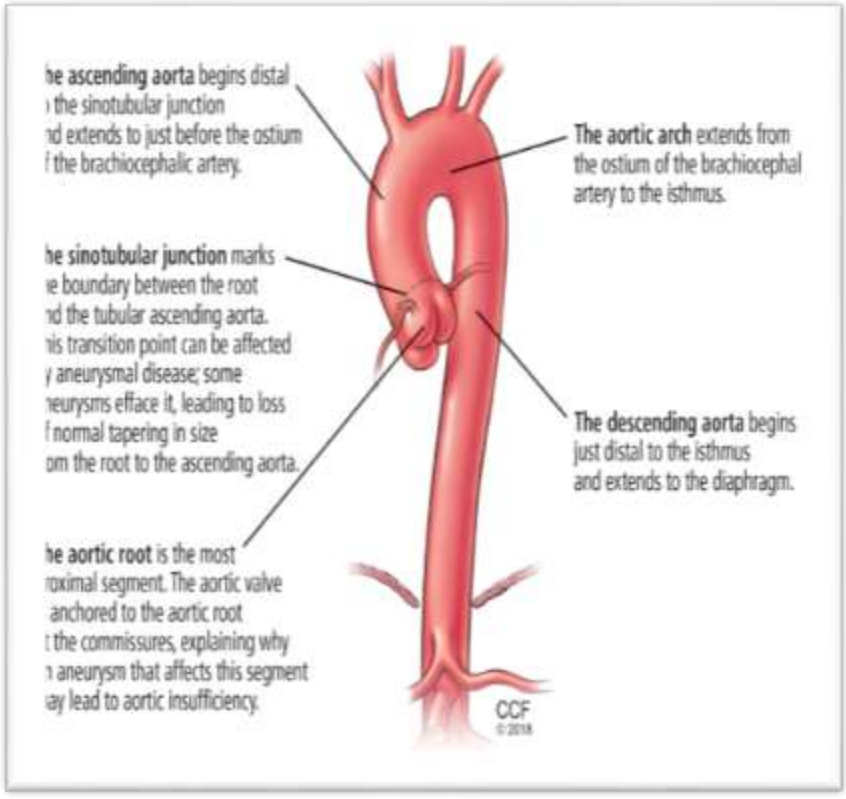
Do not code Aortic Root Procedure when the surgeon performs an aortic valve procedure and a concomitant annular enlargement with no other aortic root procedure performed. Annular enlargement is often required for aortic valve procedures and do not constitute a procedure on the aorta.

SEQ. #: 4962
Long Name: VS –Aorta - Replacement of non-coronary sinus (Modified Wheat/ Modified Yacoub)
Short Name: AVReplNonCorSinAo
Definition - Indicate if a replacement of a non-coronary sinus was performed. This includes modified Wheat and modified Yacoub procedures.

Intent/Clarification: Modified Yacoub refers to the strategy whereby 1 to 3 sinuses (most commonly 1 sinus, the non-coronary sinus), and the tongues of the ascending aortic prosthesis are sewn to the native aortic wall.

SEQ. #: 4963
Long Name: VS-Aortic Root Procedure
Short Name: VSAVRoot
Definition: Indicate whether an aortic root procedure was performed during this operation.

Intent/Clarification: Do not code Aortic Root Procedure when the surgeon performs only an annular enlargement with no other aortic root procedure.

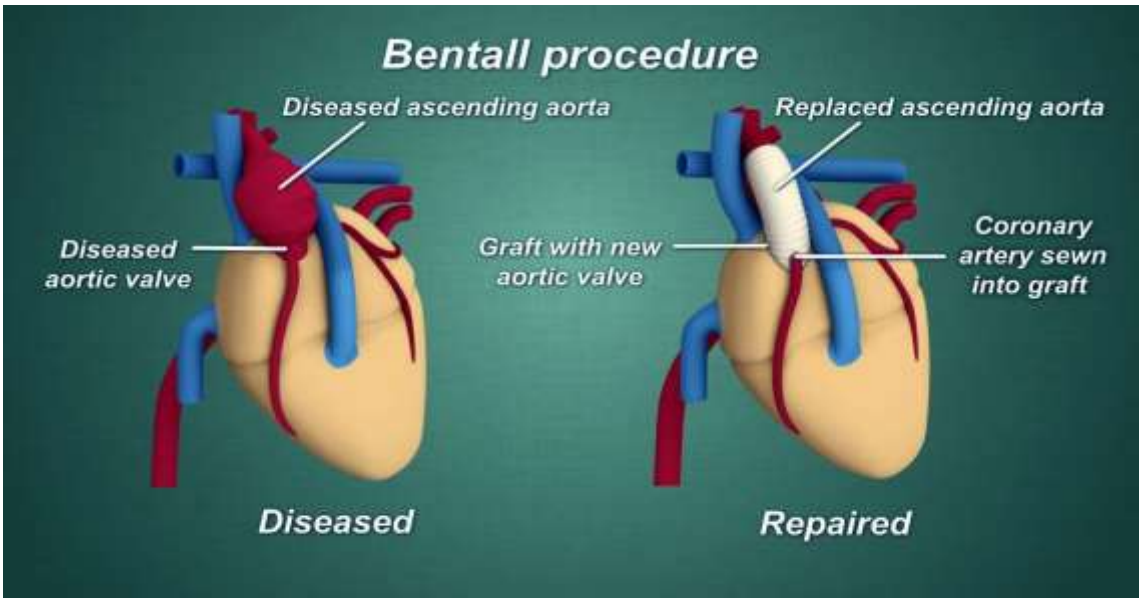


SEQ. #: 4964
Long Name: VS-Aortic Root Replacement With Coronary Ostial Reimplantation
Short Name: VSAVRootOReimp

Definition: Indicate whether the root replacement procedure included coronary Ostial Reimplantation.

Intent/Clarification: Most common procedure is a Bentall/ Modified Bentall. A Bentall involves composite graft replacement of the aortic valve, aortic root and ascending aorta, with re-implantation of the coronary arteries into the graft.

A Cabrol / Modified Cabrol may also be captured here. The Cabrol procedure is a variation of the Bentall procedure. The Cabrol uses a composite graft and an interposition graft. The composite graft replaces the ascending aorta and aortic valve. The interposition graft serves as the reimplantation site for the coronary arteries. A Cabrol is a circumferential dacron tube anastomised to both coronaries.



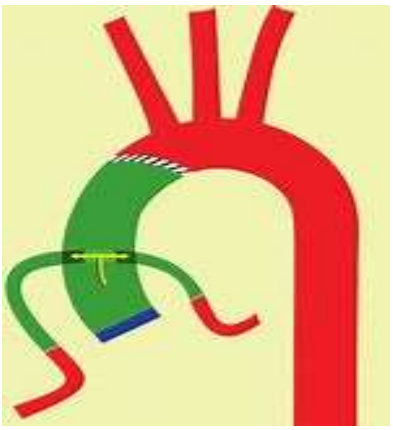


Figure 3 Cabrol Procedure

SEQ. #: 4965
Long Name: VS-Aortic Root Procedure With Coronary Ostial Reimplantation - Type
Short Name: VSAVRootOReimpType
Definition: If a root procedure was performed, indicate the type of reimplantation.

Intent/Clarification:

- Composite Valve Conduit
- Valve Sparing Root

SEQ. #: 4966
Long Name: VS-Aortic Root Procedure With Coronary Ostial Reimplantation – (Bentall) - Type
Short Name: VSAVRootOReimpType
Definition: Indicate the type of device used for root replacement.

Intent/Clarification: Includes all Aortic Root procedures with coronary ostial reimplantation, not just Bentall.

- Mechanical
- Bioprosthetic
- Homograft root replacement - a graft of tissue taken from a donor of the same species as the recipient.
- Autograft with native pulmonary valve (Ross procedure) - a tissue or organ that is transplanted from one part to another of the same body. **Update July 2020 Ross procedure with autograft capture in SEQ 4966 and for SEQ 5440 code as No to devices inserted.**

SEQ. #: 4967
Long Name: VS-Aortic Root Procedure With Coronary Ostial Reimplantation – Bioprosthetic Type
Short Name: VSAVRepBioTy
Definition: Indicate the type of bioprosthetic device used during the aortic root replacement with coronary Ostial Reimplantation

Intent/Clarification:

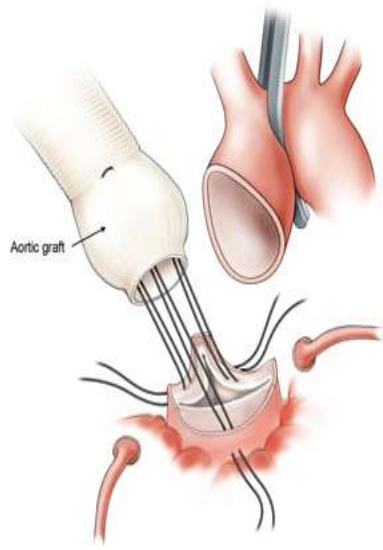
- Stented valve conduit
- Stentless valve conduit
- Stentless biologic full root

SEQ. #: 4968
Long Name: VS-Aortic Valve Sparing Root Operation
Short Name: VSAVSparRtOp
Definition: Indicate the type of aortic valve sparing root operation that was performed

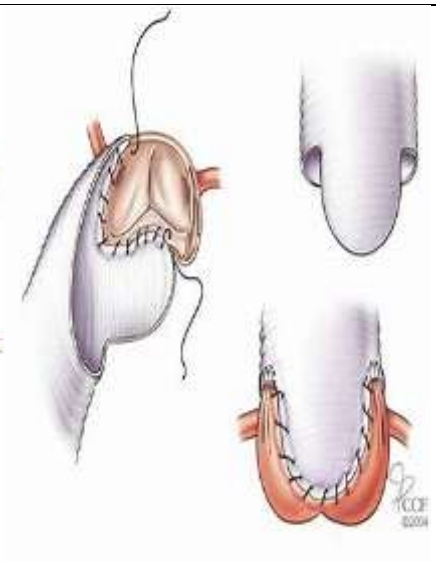
Intent/Clarification:

- Valve sparing root reimplantation (David) - The tube graft surrounds the native valve. The coronary arteries are re-implanted (figure 1).
- Valve sparing root remodeling (Yacoub) - The tube graft is grooved to fit around the coronary arteries (figure 2).
- Valve sparing root reconstruction (Florida Sleeve) – The tube graft is prepared with openings for the coronary arteries (the coronaries are not re-implanted). The graft is placed onto the root, reinforcing the sinuses (figure 3).

Note: If a commissural resuspension is performed in conjunction with valve sparing root procedure Seq 4968, both leaflet commissural resuspension suture and valve sparing root procedure should be captured. Update August 2020 - Leaflet commissural resuspension suture with replacement of the ascending aorta is not captured as a valve sparing root procedure in SEQ 4968. It is captured in SEQ 4958.



David



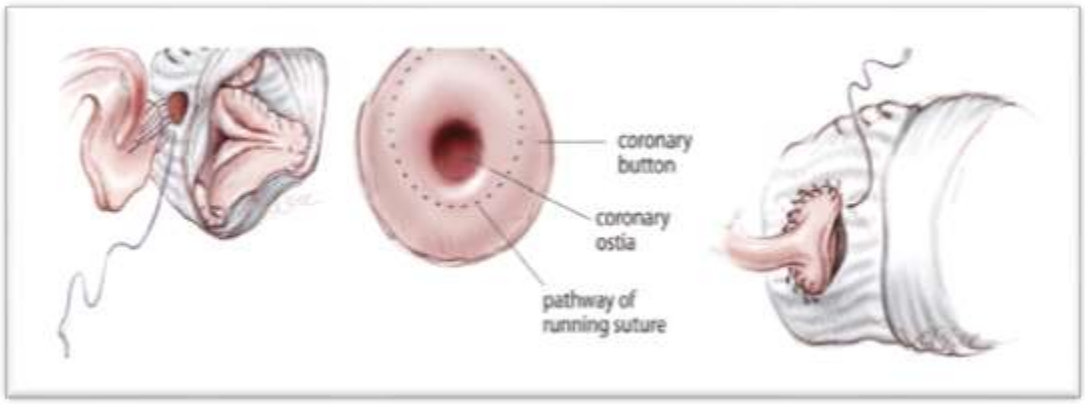
Yacoub

Florida Sleeve

SEQ. #: 4969
Long Name: Coronary Reimplantation
Short Name: VSAVCorReimp
Definition: Indicate the type of coronary reimplantation performed. If the procedure did not include coronary reimplantation, select none.

Intent/Clarification: The 'button technique' is currently the most used method for coronary ostia reimplantation.

- No
- Direct to root prosthesis (Button, Trapdoor)
- With vein graft extension (SVG Cabrol)
- With dacron graft extension (Classic Cabrol)



SEQ. #: 4970
Long Name: VS-Aortic Valve Major Root Reconstruction/Debridement without coronary ostial reimplantation
Short Name: VSAVRootRecon
Definition: Indicate whether the procedure included aortic valve major root reconstruction / debridement.

Intent/Clarification: Indicate whether the procedure included aortic valve major root reconstruction / debridement without coronary ostia reimplantation.

- Yes
- No

SEQ. #: 4975
Long Name: Surgical Ascending/Arch Procedure
Short Name: ArchProc
Definition: Indicate if a surgical ascending/arch procedure was performed. Endovascular procedures are not captured here.

Intent/Clarification: The intent is to identify procedures involving the ascending aorta and arch. The ascending aorta is the first part **of the aorta originating at the left ventricle and leading into the aortic arch.**

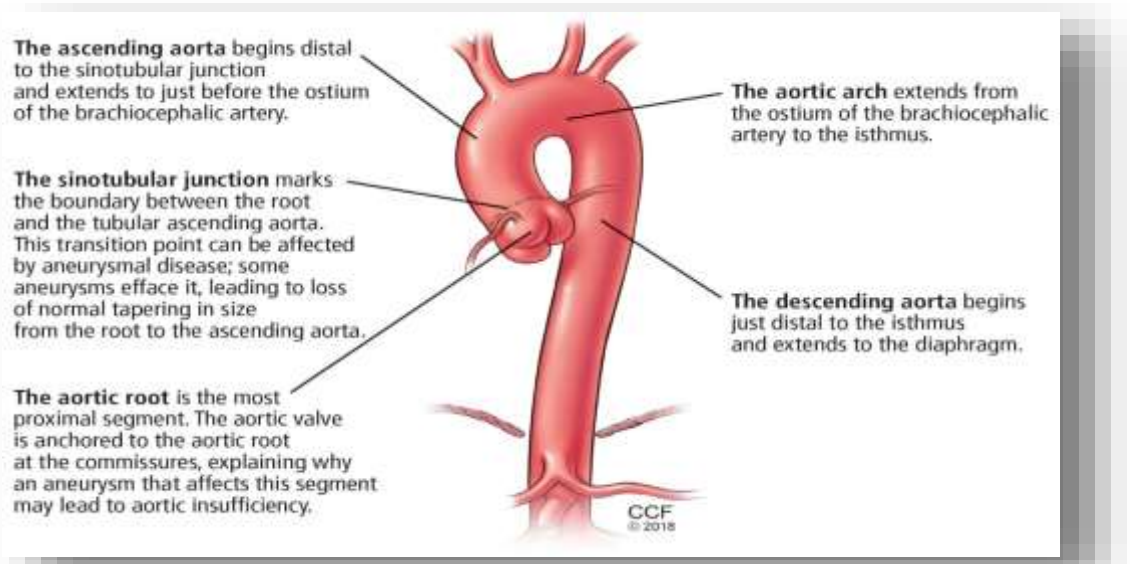
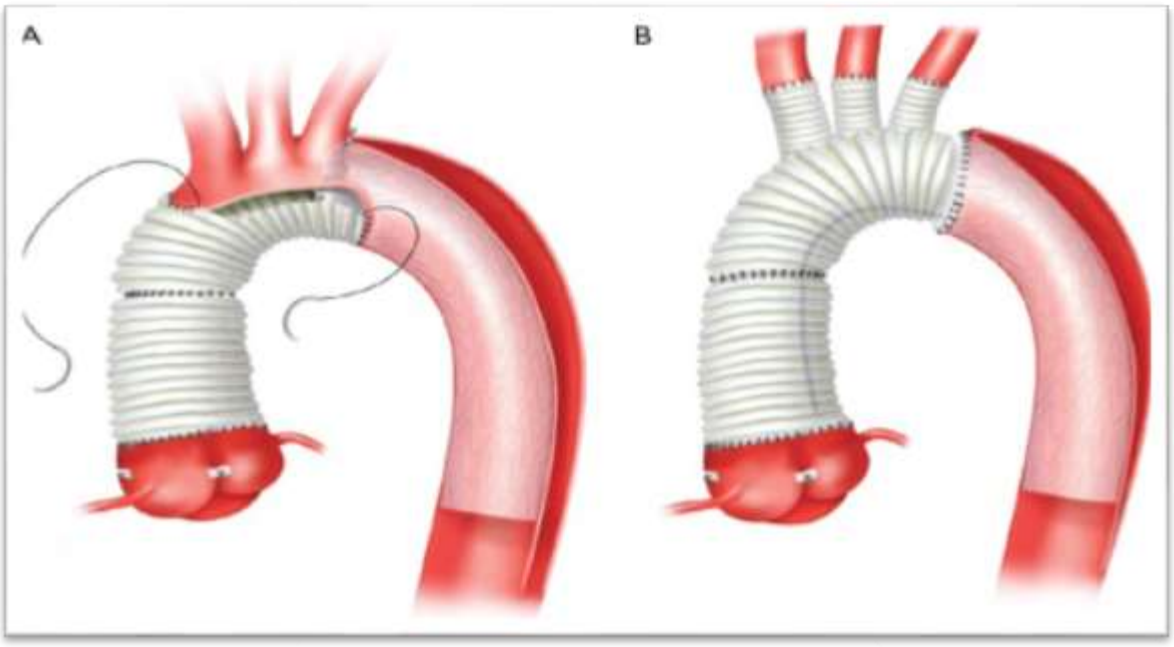


Figure A Hemiarch

Figure B Total Arch with Debranching (Arch Branch Reimplantation)



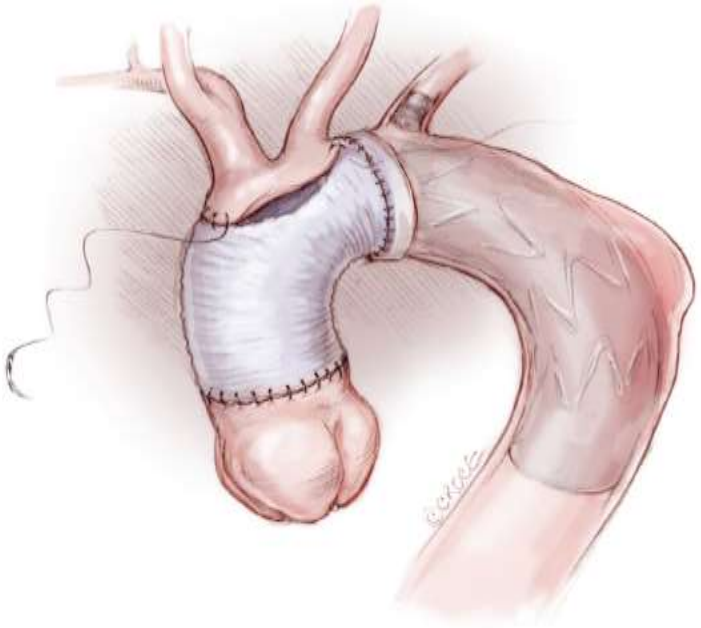
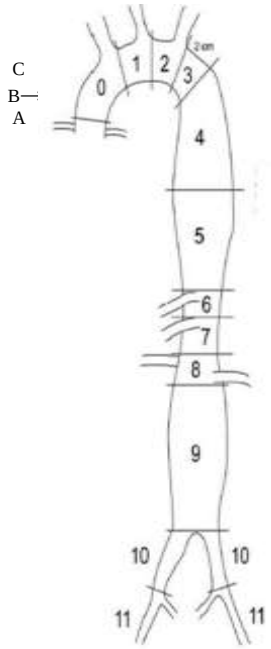


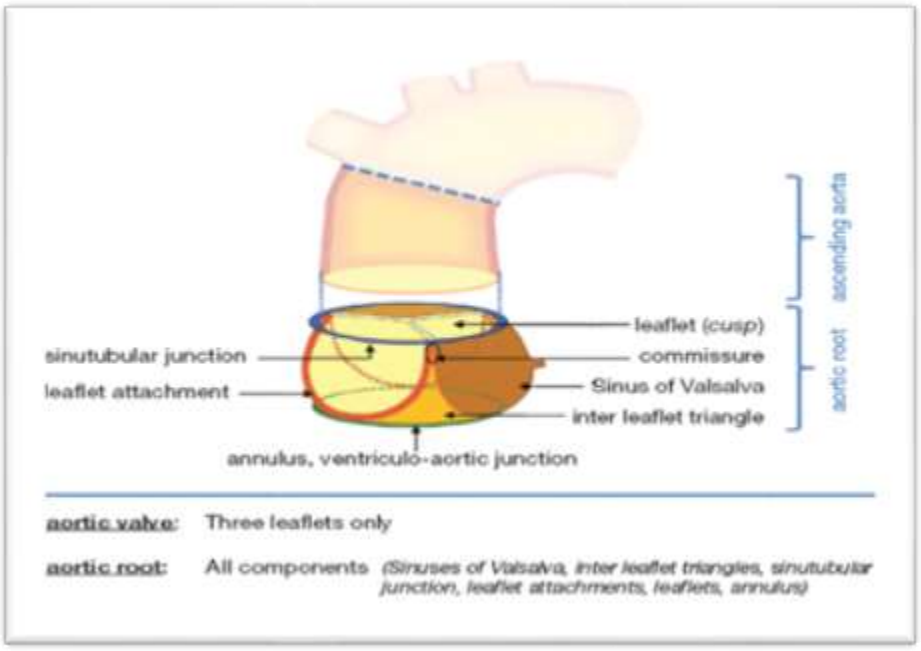
Figure 4 Total Arch with an Island

SEQ. #: 4976
Long Name: Surgical Ascending/Arch Procedure – Proximal Location
Short Name: ArchProxLoc
Definition: Indicate the proximal location (closest to the heart) of the procedure performed on the ascending/arch. If the procedure originate with the aortic valve choose STJ-Midascending.

Intent/Clarification: This is the first section that is closest to the heart where the procedure begins.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

SEQ. #: 4980
Long Name: Open Arch Procedure - Distal Technique
Short Name: ArchDisTech
Definition: Indicate the distal technique for the arch procedure

Intent/Clarification: The intent is to define whether the distal anastomosis was done with or without a clamp.

- Open/Unclamped - Many arch procedures are done with the aorta clamp removed. This requires circulatory arrest.

- Clamped - The aorta is clamped with an instrument and the anastomosis is completed proximal (close to the heart) to that part of the aorta.

SEQ. #: 4985
Long Name: Open Arch Procedure - Distal Site
Short Name: ArchDiscSite
Definition: Indicate the distal site

Intent/Clarification: The intent of this is to define the level of the distal (far from the heart) anastomosis.

- Ascending aorta implies the ascending was resected with a clamp on the distal ascending aorta.

- Hemiarch means a single anastomosis was done somewhere in the ascending or proximal arch without separate grafts to the head vessels.

- Zone 1 means the innominate was reconnected with a graft between the innominate and left common carotid takeoffs.

- Zone 2 means the innominate and carotid were reconnected with a graft sewn to between the left common carotid and the left subclavian takeoffs.

- Zone 3 means the innominate, carotid and the left subclavian were reconnected with the graft being sewn beyond the left subclavian takeoff.

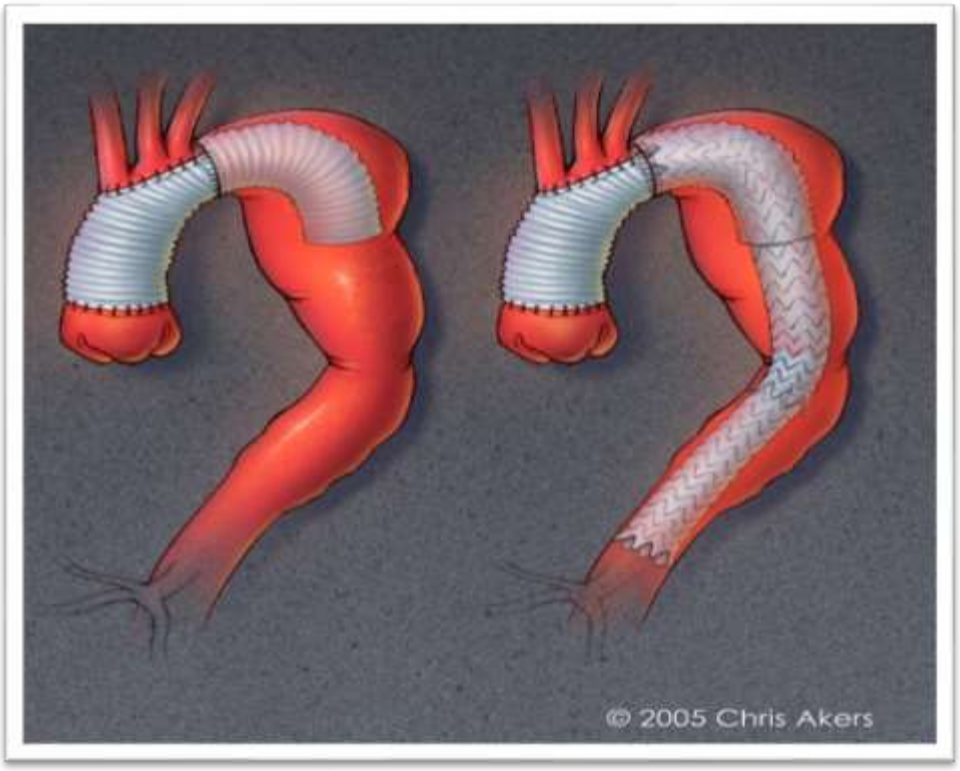
- Zone 4 means the graft was sewn to the mid descending thoracic aorta.

SEQ. #: 4990
Long Name: Open Arch Procedure - Distal Extension
Short Name: ArchDisExt
Definition: Indicate distal extension type

Intent/Clarification: The intent of the question is to define whether graft was left that extended (distally) beyond the arch anastomosis.

- Elephant trunk - An elephant trunk is a soft graft. The aortic arch is replaced, and a free-floating extension of the arch prosthesis (elephant trunk) is left behind in the proximal descending aorta – see figure 1 below.

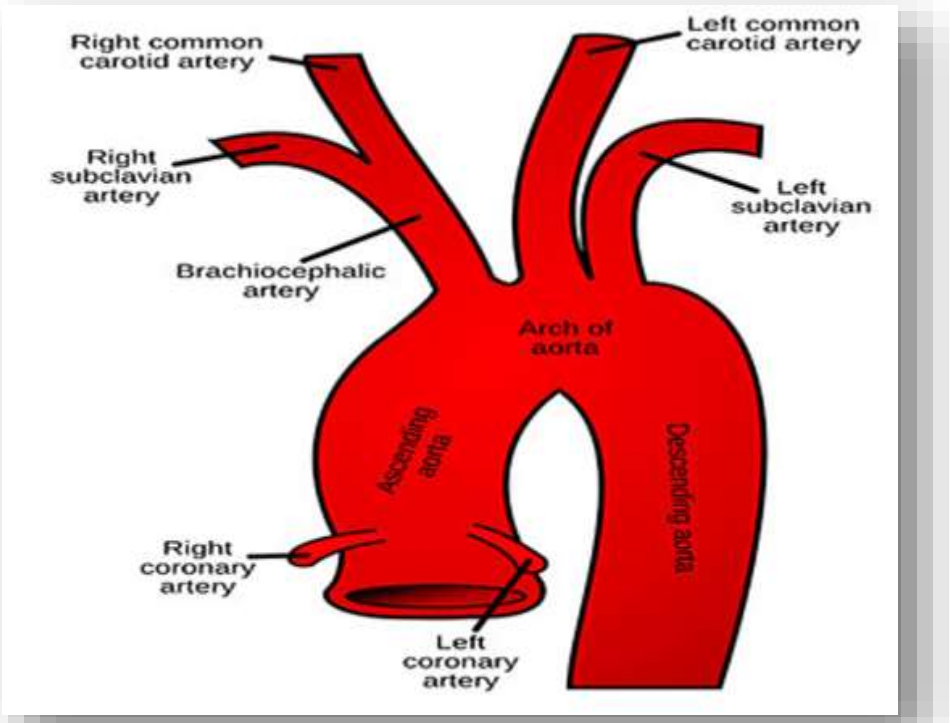
- Frozen Elephant trunk – A frozen elephant trunk means a stent was placed distally. The proximal portion is non-stented and consists of a Dacron sleeve for conventional surgical handling; the distal part consists of a stent graft – see figure 2 below.
- No



SEQ. #: 4995
Long Name: Open Arch Procedure - Arch Branch Reimplantation
Short Name: ArchBranReimp
Definition: Indicate whether arch branch reimplantation was performed

Intent/Clarification: The intent of this is to define the end branches that were sewn to the graft.

Note: The surgeon performed an open elephant trunk and the graft material covered the Left Subclavian. Therefore, he fenestrated the graft and stented into the Left Subclavian. This should be captured as Arch Reimplantation (seq 4995) ‘yes’ and Left Subclavian (seq 4996) ‘yes.’ Capture the graft material in the device section, but you do not need to capture the stent in the device section.



SEQ. #: 4996
Long Name: Arch Branch Location
Short Name: ArchBranReimpLoc
Definition: Indicate the arch branch location. If more than one arch branch was reimplanted, select all that apply.

Intent/Clarification:

- Innominate - The intent is to determine whether the innominate artery (also called the brachiocephalic artery) was reattached to the graft.

- Left subclavian - The intent is to determine whether the left subclavian artery was reattached to the graft.

- Right subclavian - The intent is to determine whether the right subclavian artery was reattached to the graft. This means the right subclavian was sewn to directly, not from the trunk or bifurcation of the innominate.

- Left vertebral - The intent is to determine whether the left vertebral artery was reattached to the graft. This means a separate graft or anastomosis was created for the vertebral, not when it remains attached to the left subclavian artery.

- Right common carotid - The intent is to determine whether the right carotid artery was reattached to the graft. This means the right subclavian was sewn to directly,

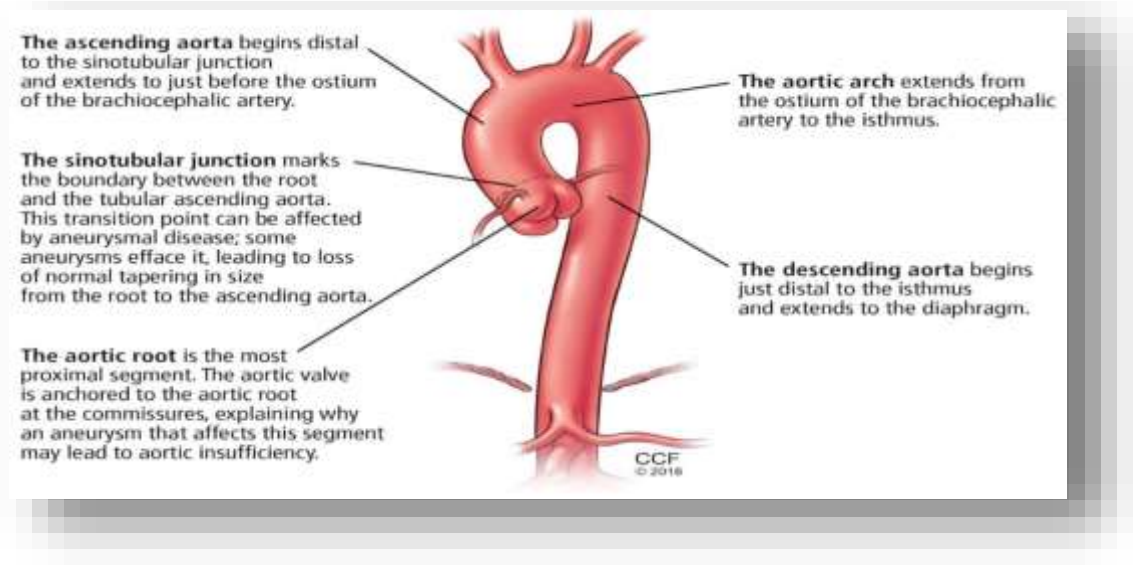
not from the trunk or bifurcation of the innominate.

- Left common carotid - The intent is to determine whether the left common carotid artery was reattached to the graft.

- Other - The intent is to determine whether arch branch reimplantation included any other artery.

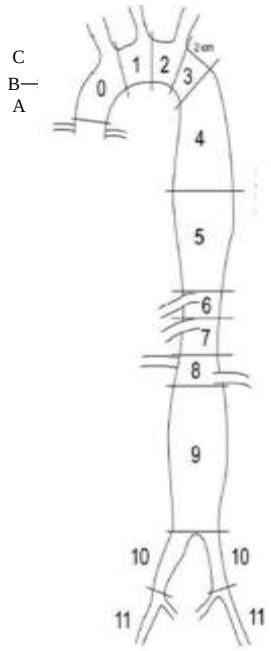
SEQ. #: 5015
Long Name: Surgical Descending Thoracic Aorta or Thoracoabdominal Procedure
Short Name: DescAortaProc
Definition: Indicate if a surgical procedure of the descending thoracic or thoracoabdominal aorta was performed. Endovascular procedures are not captured here.

Intent/Clarification: The intent of this is to define procedures involving the descending thoracic aorta or the thoracoabdominal aorta, usually through the left chest.



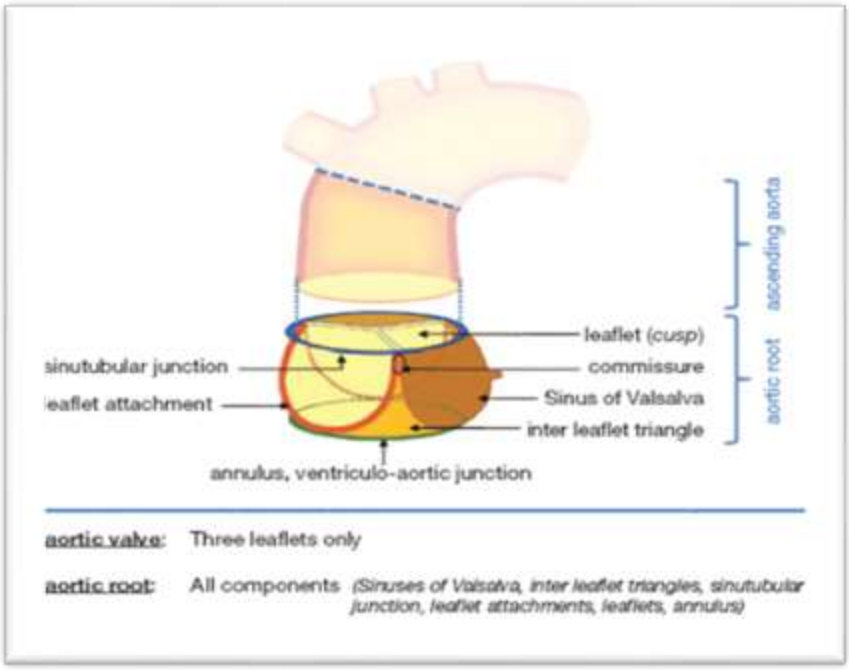
SEQ. #: 5020
Long Name: Open Surgical Descending - Proximal Location
Short Name: DescAortaLoc
Definition: Indicate the proximal location of the descending aorta procedure

Intent/Clarification: The intent of this procedure is to define the proximal extent or coverage of the arch as defined by the zones defined on the collection form or with an open anastomosis to the mid to distal arch, without branch anastomosis, known as a hemiarch. Zones imply the zone branches are taken or revascularized.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



- Reverse Hemiarch - A reverse hemiarch is an open anastomosis of the proximal suture line of a descending aortic replacement and is beveled on the lesser curve of the arch proximally towards the zone 1/zone 2 and ascending aorta (it is effectively similar to a conventional hemiarch done for proximal aortic surgery, but directed in the opposite direction from the distal arch to the proximal portions).

- Zone 0 is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery). The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery

and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

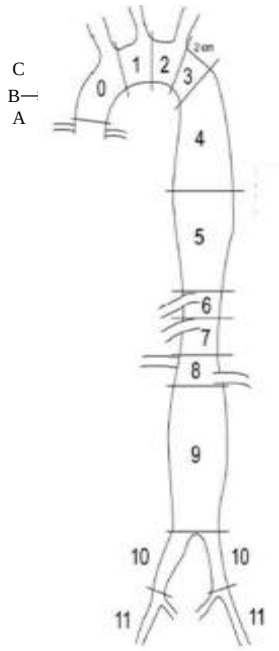
- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

SEQ. #: 5030
Long Name: Intercostal Reimplantation
Short Name: AortaInterReimp
Definition: Indicate whether intercostal vessels were reimplanted

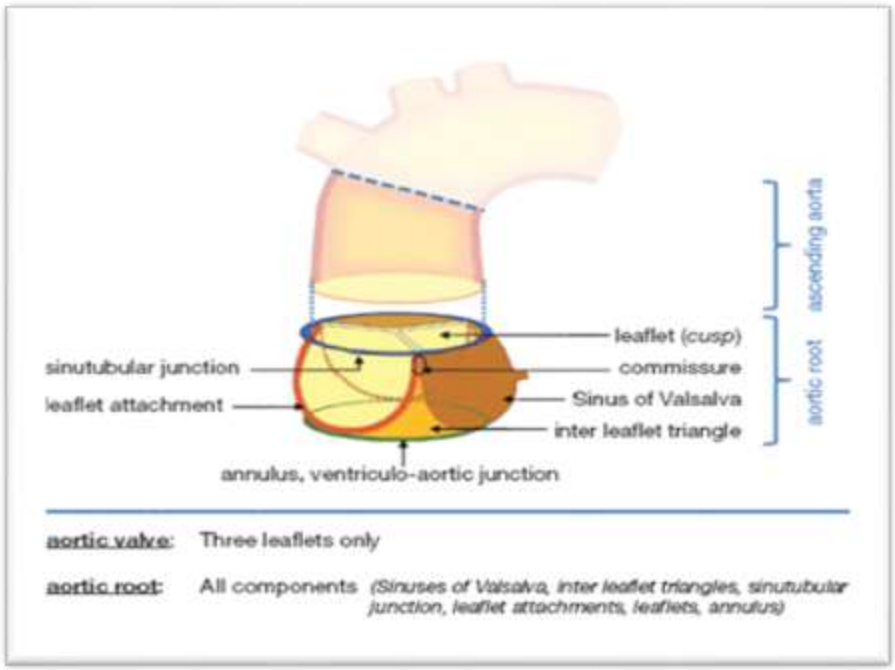
Intent/Clarification: The intent of this is to define procedures where either an island of intercostal vessels are sewn to the graft or a separate branch is used to sew them to the graft.

SEQ. #: 5035
Long Name: Distal Location
Short Name: AortaDisZone
Definition: Indicate the distal location of the descending/thoracoabdominal procedure

Intent/Clarification: The intent of this is to define the distal extant of the aortic intervention as defined by the zones defined on the collection form. An apical-aortic conduit is coded as an aortic valve implant only and then code the distal aortic location.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

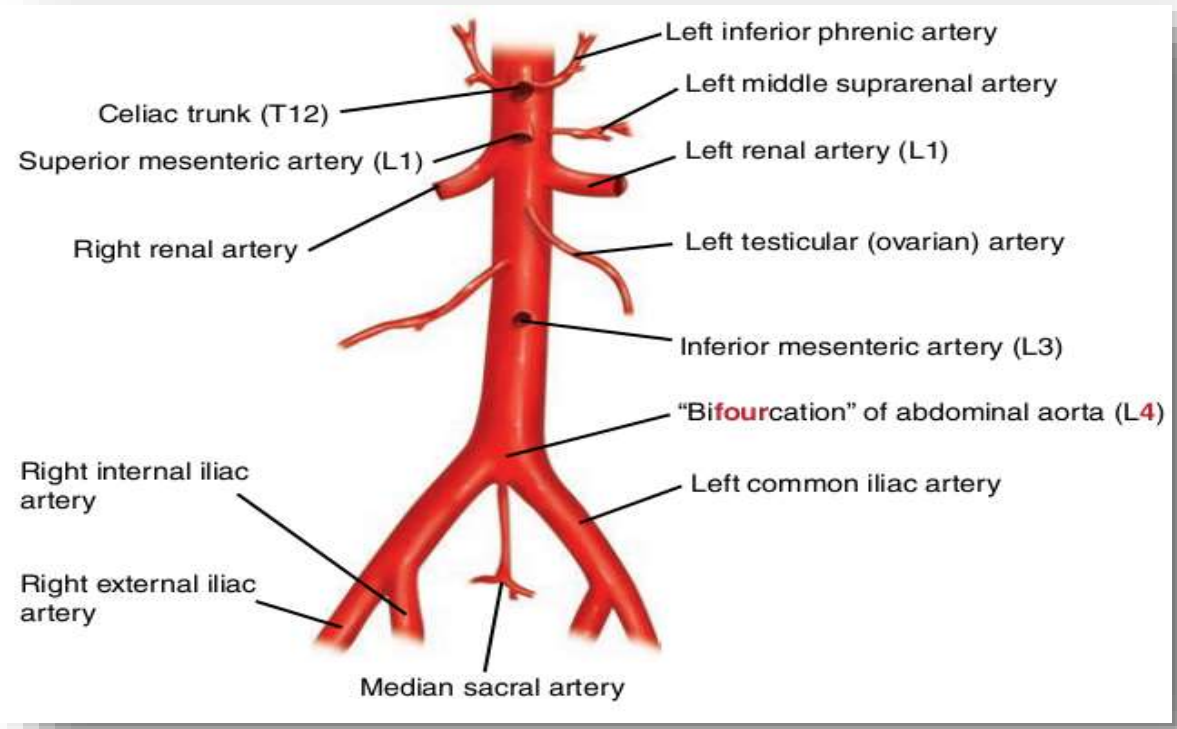
- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 5045
Long Name: Visceral Vessel Intervention
Short Name: AortaVisceral
Definition: Indicate whether there was visceral vessel intervention

Intent/Clarification: The intent of this is to define whether the visceral vessels were revascularized by sewing the vessels to the graft, reimplantation, or using a branch graft.

- Yes
- No



SEQ. #: 5050
Long Name: Visceral Vessel Intervention - Celiac
Short Name: AortaViscCel
Definition: Indicate whether the visceral vessel intervention involved the celiac artery

Intent/Clarification: The intent of this is to define whether the celiac artery was revascularized by sewing the vessels to the graft, reimplantation, or using a branch graft.

- Reimplantation
- Branch graft
- None

SEQ. #: 5055
Long Name: Visceral Vessel Intervention - Superior Mesenteric
Short Name: AortaViscSup
Definition: Indicate whether the visceral vessel intervention involved the superior mesenteric artery

Intent/Clarification: The intent of this is to define whether the superior mesenteric artery was revascularized by sewing it to the graft, reimplantation, or using a branch graft.

- Reimplantation

- Branch graft
- None

SEQ. #: 5060
Long Name: Visceral Vessel Intervention - Right Renal
Short Name: AortaViscRenR
Definition: Indicate whether the visceral vessel intervention involved the right renal artery

Intent/Clarification: The intent of this is to define whether the right renal artery was revascularized by sewing it to the graft, reimplantation, or using a branch graft.

- Reimplantation
- Branch graft
- None

SEQ. #: 5065
Long Name: Visceral Vessel Intervention - Left Renal
Short Name: AortaViscRenL
Definition: Indicate whether the visceral vessel intervention involved the left renal artery

Intent/Clarification: The intent of this is to define whether the left renal artery was revascularized by sewing it to the graft, reimplantation, or using a branch graft.

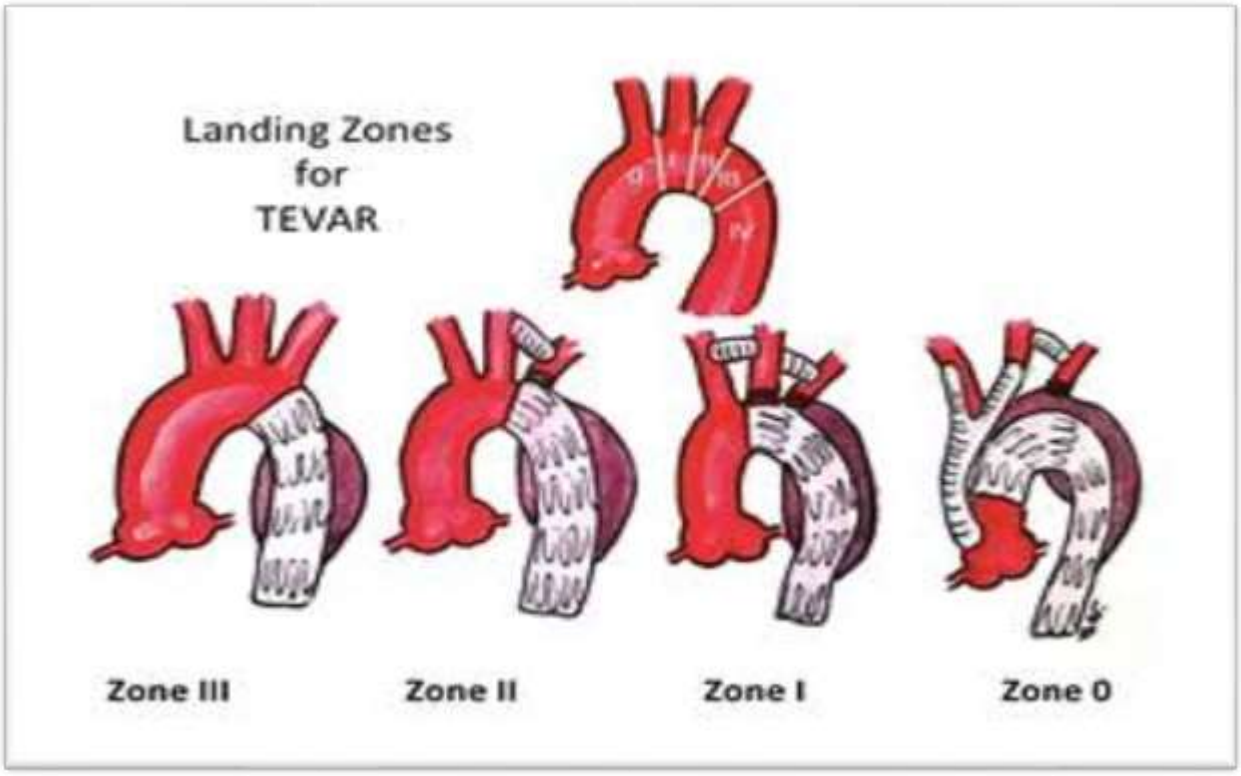
- Reimplantation
- Branch graft
- None

SEQ. #: 5066
Long Name: Endovascular Procedures
Short Name: EndovasProc
Definition: Indicate whether there was an endovascular procedure

Intent/Clarification: The intent is to capture catheter-based procedures where a stent is implanted into the aorta.

TEVAR are included as endovascular aorta cases if a CT surgeon on the participant agreement participated in the TEVAR. **Update August 2020 - TEVAR with any portion above the level of the diaphragm is to be entered into the database.** EVARs are not included in the STS Database.

During the same episode of care, capture the TEVAR with the index procedure on the same data collection form. For example: The patient was initially scheduled for TEVAR but after a series of CT scans and manifestations of signs and symptoms, the surgeon opted to repair the ascending aortic flap first and then, 3 days later during the same episode of care, he took the patient back to the OR for the TEVAR. Code as a planned staged hybrid Seq 5400. Then capture the TEVAR accordingly in SEQ 5095. Use the OR times from the open procedure.



SEQ. #: 5067
Long Name: Endovascular Procedures - Access
Short Name: EndovasAccess
Definition: Indicate the access used for the endovascular procedure

Intent/Clarification: Code the blood vessel through which the stent graft was delivered.

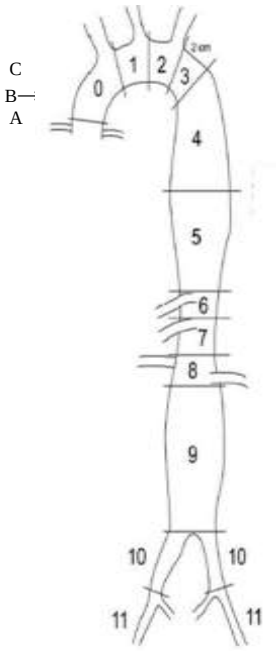
- Femoral
- Iliac
- Abdominal aorta
- Left subclavian/axilla
- Right subclavian/axilla
- Ascending aorta
- Carotid
- LV apex

SEQ. #: 5068
Long Name: Endovascular Procedures - Percutaneous Access
Short Name: EndovasPercAcc
Definition: Indicate whether access was percutaneous

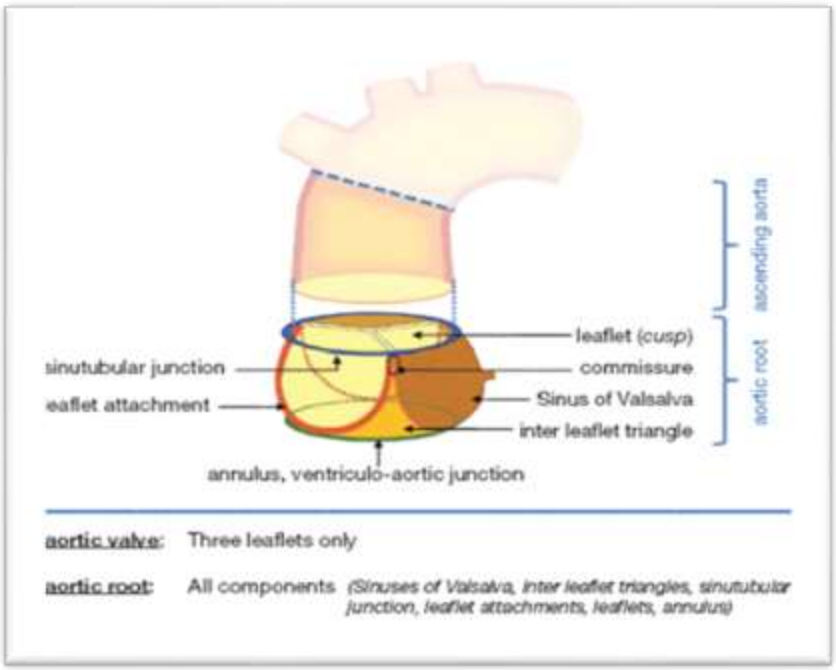
Intent/Clarification: The intent is to capture needle access; no incision is required; a stab wound may be required for sheath placement.

SEQ. #: 5070
Long Name: Endovascular Procedures - Proximal Landing Zone
Short Name: EndoProxZone
Definition: Indicate the proximal landing zone

Intent/Clarification: The proximal landing zone is the area of the aorta closest to the heart where the graft is located. If two or more stent grafts were used, please label the proximal landing zone according to the site where the most proximal stent graft has its most proximal location.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

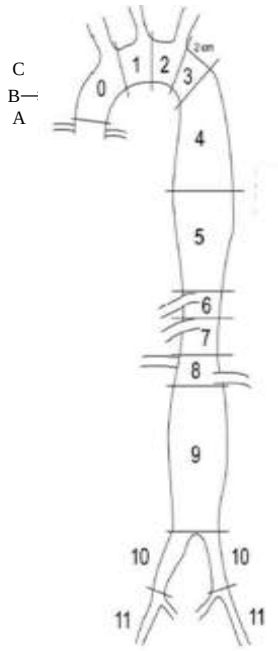
- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

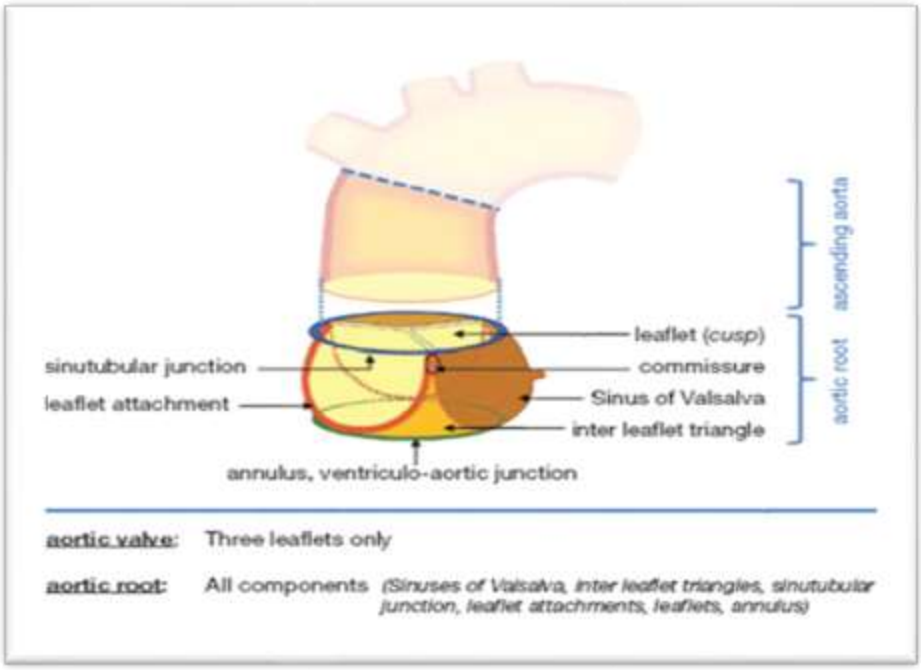
SEQ. #: 5080
Long Name: Endovascular Procedures - Distal Landing Zone
Short Name: EndoDistalZone
Definition: Indicate the distal landing zone

Intent/Clarification: The distal landing zone defines the closet to the iliac bifurcation (furthest from the heart). If two or more stent grafts were used, please label the distal landing zone according to the site where the most distal stent graft has its most distal location.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

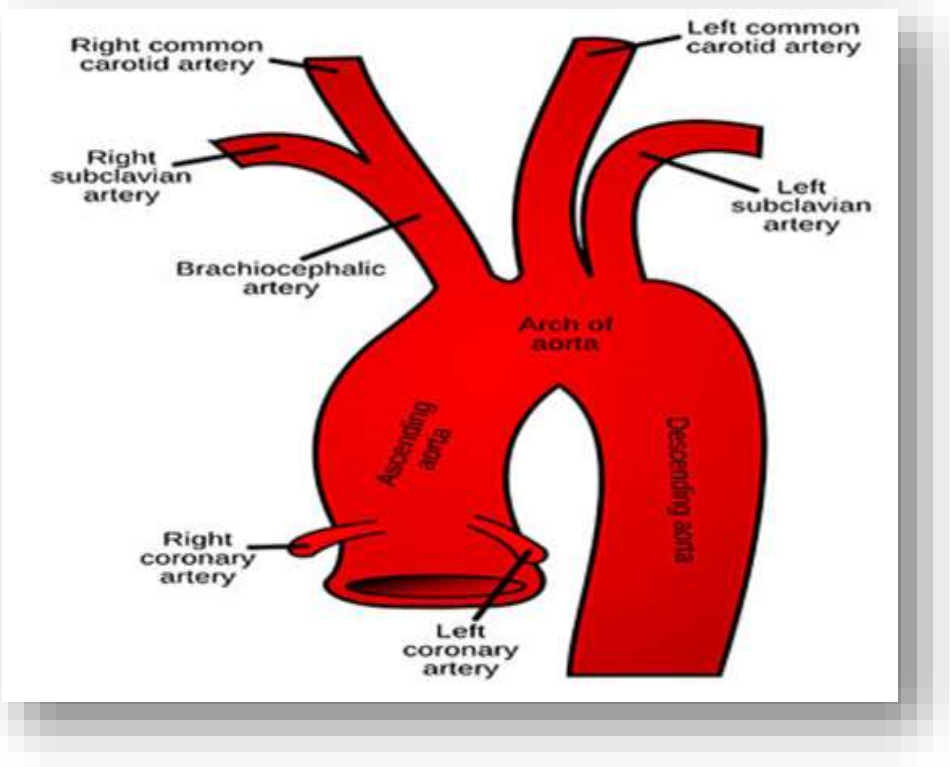
- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure).

SEQ. #: 5095
Long Name: Endovascular Procedures - Ascending TEVAR
Short Name: EndovasTEVAR
Definition: Indicate whether an ascending TEVAR was performed

Intent/Clarification: Intent is to identify whether a stent graft placed in Zone 0, a region spanning from the STJ to the innominate artery was a Dedicated IDE or an Off-Label Stent

- Dedicated IDE - An IDE is an investigational device exemption. This allows a device that is not currently approved by the FDA to be used.
- Off Label Stent- *Off-label use* of *stents* occurs when the implantation takes place outside the scope of the approved label.
- No



SEQ. #: 5100
Long Name: Arch Vessel Management - Innominate
Short Name: Innominate
Definition: Indicate the management of the innominate artery

Intent/Clarification: The innominate artery (also known as the brachiocephalic artery) originates in the aortic arch as the first branch of the arch and divides into the right common carotid and right subclavian arteries. The intent is to understand how the innominate artery received its blood flow following an endovascular procedure.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

SEQ. #: 5101
Long Name: Innominate - Extra-Anatomic Bypass Location
Short Name: InExtraAnatBypLoc
Definition: For innominate vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy

Intent is to describe how the arch branch vessel was managed as part of a hybrid strategy (i.e. separate surgical procedure either done concurrently or at a previous time, typically done during the same admission) to provide blood flow following or as part of that strategy.

- Aorta - innominate - Aorta to innominate bypass means a graft was created from the native aorta or surgically replaced aorta to the innominate artery

- Aorta - right carotid - Aorta to right carotid bypass means a graft was created from the native aorta or surgically replaced aorta to the right carotid artery. This bypass is done beyond the innominate and often for aneurysm of the innominate and includes bypass of the right subclavian as well.

- Aorta - right subclavian - Aorta to right subclavian bypass means a graft was created from the native aorta or surgically replaced aorta to the right subclavian artery. This bypass is done beyond the innominate and often for aneurysm of the innominate and includes bypass of the right carotid as well.

- Right carotid - right subclavian - This means that either a bypass (i.e. use of a separate graft) or direct transposition was performed to create a communication between the right carotid and subclavian vessels.

- Other

SEQ. #: 5140
Long Name: Arch Vessel Management - Left Carotid
Short Name: LeftCarotid
Definition: Indicate the management of the left carotid artery

Intent/Clarification: Intent is to describe specifically how the arch branch vessel was managed as part of a hybrid strategy (i.e. separate surgical procedure either done concurrently or at a previous time, typically done during the same admission). The left carotid artery arises from the aortic arch.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. <u>This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.</u>

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch

graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

SEQ. #: 5141
Long Name: Arch Vessel Management - Left Carotid - Extra-anatomic Bypass
Short Name: LeftCarotidExtraAnatByp
Definition: For left carotid vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

Intent is to describe specifically how the arch branch vessel was managed as part of a hybrid strategy (i.e. separate surgical procedure either done concurrently or at a previous time, typically done during the same admission).

- Aorta - left carotid - The extra-anatomic bypass was an aorta to left carotid bypass.

- Innominate - The extra-anatomic bypass was an innominate to left carotid bypass

- Right carotid- left carotid - The extra-anatomic bypass was a right carotid to left carotid bypass

- Other - Any other extra-anatomic left carotid bypass was performed.

SEQ. #: 5180
Long Name: Arch Vessel Management - Left Subclavian
Short Name: LeftSubclavian
Definition: Indicate the management of the left subclavian artery

Intent/Clarification: Intent is to describe specifically how the arch branch vessel was managed as part of a hybrid strategy (i.e. separate surgical procedure either done concurrently or at a previous time, typically done during the same admission. The left subclavian artery arises from the distal aortic arch.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

SEQ. #: 5181
Long Name: Arch Vessel Management - Left Subclavian - Extra-anatomic Bypass
Short Name: LeftSubclavExtraAnatByp
Definition: For left subclavian vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

Intent is to describe specifically how the arch branch vessel was managed as part of a hybrid strategy (i.e. separate surgical procedure either done concurrently or at a previous time, typically done during the same admission).

- Aorta - left subclavian - The extra-anatomic bypass was an aorta to left subclavian bypass.

- Left carotid - left subclavian - The extra-anatomic bypass was a left carotid to left subclavian bypass This means that either a bypass (i.e. use of a separate graft) or direct transposition was performed to create a communication between the left carotid and subclavian vessels.

- Other - Although most strategies are included in the list above this may be checked if another procedure is performed such as a transposition.

SEQ. #: 5220
Long Name: Visceral Vessel Management - Celiac
Short Name: Celiac
Definition: Indicate management of the celiac artery

Intent/Clarification:
The intent is to clarify whether the celiac axis/artery was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular

Branch Graft" should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a "chimney" or "periscope" technique "Endovascular Parallel Graft" should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then "Fenestrated" should be selected. This may include coverage of a graft.

- No flow restored

FAQ August 2020 - How do you code visceral vessel management for a TEVAR in the Descending Thoracic Aorta when the patient has a prior history of fenestrated stent-graft repair of juxtarenal aortic aneurysm? Should I code the presence of these prior stents and fenestrations to the celiac, mesenteric, renal and Iliac arteries even though they were not done during the current procedure?
Answer - Code as "native flow" since the visceral vessels were not manipulated as part of the descending TEVAR procedure.

SEQ. #: 5221
Long Name: Visceral Vessel Management - Celiac - Extra-anatomic Bypass
Short Name: CeliacExtraAnatBy
Definition: For celiac vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Aorta - celiac - The extra-anatomic bypass was aorta to celiac. The bypass may originate from any segment of the aorta (e.g. ascending, descending, abdominal).

- Iliac - celiac - The extra-anatomic bypass was iliac to celiac. The bypass may originate from any segment of the iliac artery (e.g. common, external, or internal).

- Other - This includes a bypass from any other vessel to the celiac or one if its branches (e.g. hepatic, splenic). Examples would include hepatorenal or splenorenal bypass.

SEQ. #: 5270
Long Name: Visceral Vessel Management - Superior Mesenteric
Short Name: SupMesenteric
Definition: Indicate management of the superior mesenteric artery

Intent/Clarification: The intent is to clarify whether the superior mesenteric artery (SMA) was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic

endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

FAQ August 2020 - How do you code visceral vessel management for a TEVAR in the Descending Thoracic Aorta when the patient has a prior history of fenestrated stent-graft repair of juxtarenal aortic aneurysm? Should I code the presence of these prior stents and fenestrations to the celiac, mesenteric, renal and Iliac arteries even though they were not done during the current procedure?
Answer - Code as “native flow” since the visceral vessels were not manipulated as part of the descending TEVAR procedure.

SEQ. #: 5271
Long Name: Visceral Vessel Management - Superior mesenteric - Extra-anatomic Bypass
Short Name: SupMesExtraAnatByp
Definition: For superior mesenteric management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Aorta - superior mesenteric - The extra-anatomic bypass was aorta to superior mesenteric. The bypass may originate from any segment of the aorta (e.g. ascending, descending, abdominal).

- Iliac - superior mesenteric - The extra-anatomic bypass was iliac to superior mesenteric. The bypass may originate from any segment of the iliac artery (e.g. common, external, or internal).

- Other - This includes a bypass from any other vessel to the superior mesenteric.

SEQ. #: 5320
Long Name: Visceral Vessel Management - Right Renal
Short Name: RightRenal
Definition: Indicate management of the right renal artery

Intent/Clarification: The intent is to clarify whether the right renal artery was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

FAQ August 2020 - How do you code visceral vessel management for a TEVAR in the Descending Thoracic Aorta when the patient has a prior history of fenestrated stent-graft repair of juxtarenal aortic aneurysm? Should I code the presence of these prior stents and fenestrations to the celiac, mesenteric, renal and Iliac arteries even though they were not done during the current procedure?
Answer - Code as “native flow” since the visceral vessels were not manipulated as part of the descending TEVAR procedure.

SEQ. #: 5321
Long Name: Visceral Vessel Management - Right Renal - Extra-anatomic Bypass
Short Name: RightRenalExtraAnatByp
Definition: For right renal vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Aorta - right renal - The extra-anatomic bypass was aorta to right renal. The bypass may originate from any segment of the aorta (e.g. ascending, descending, abdominal).

- Iliac - right renal - The extra-anatomic bypass was iliac to right renal. The bypass may originate from any segment of the iliac artery (e.g. common, external, or internal).

- Other - This includes a bypass from any other vessel to the right renal artery. An example would include hepatorenal bypass.

SEQ. #: 5360
Long Name: Visceral Vessel Management - Left Renal
Short Name: LeftRenal
Definition: Indicate management of the left renal artery

Intent/Clarification: The intent is to clarify whether the left renal artery was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Endovascular branch graft - Open and covered stents may be used to hold the margin of the stent graft away from the orifice of a branch artery and preserve a channel for branch artery perfusion. Branched stent grafts are categorized as modular or unibody. If the artery is instrumented with an endovascular branch graft extending from the main body of an aortic endograft then “Endovascular Branch Graft” should be selected.

- Endovascular parallel graft - Parallel graft techniques (PGT), use of covered stents in aortic side branches parallel to and outside the abdominal or thoracic endograft. If the artery is instrumented with a separate endovascular graft that does not extend from an aortic endograft but rather courses parallel alongside an aortic endograft with flow from the native aorta as would be performed with a “chimney” or “periscope” technique “Endovascular Parallel Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a

separate prosthetic graft.

- Fenestrated - Fenestration refers to the creation of a hole within the stent graft. A common variant of the fenestrated approach involves the use of a hinged fenestration, in which a small inner fenestration is connected to a larger outer fenestration by a short, curved polyester cap. If the artery is covered by an aortic endograft with a fenestration/opening in the endograft corresponding to the location of the artery and allowing continued antegrade flow into the artery via this fenestration despite endograft coverage, then “Fenestrated” should be selected. This may include coverage of a graft.

- No flow restored

FAQ August 2020 - How do you code visceral vessel management for a TEVAR in the Descending Thoracic Aorta when the patient has a prior history of fenestrated stent-graft repair of juxtarenal aortic aneurysm? Should I code the presence of these prior stents and fenestrations to the celiac, mesenteric, renal and Iliac arteries even though they were not done during the current procedure?
Answer - Code as “native flow” since the visceral vessels were not manipulated as part of the descending TEVAR procedure.

SEQ. #: 5361
Long Name: Visceral Vessel Management - Left Renal - Extra-anatomic Bypass
Short Name: LeftRenalExtraAnatByp
Definition: For left renal vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Aorta - left renal - The extra-anatomic bypass was aorta to left renal. The bypass may originate from any segment of the aorta (e.g. ascending, descending, abdominal).

- Iliac - left renal - The extra-anatomic bypass was iliac to left renal. The bypass may originate from any segment of the iliac artery (e.g. common, external, or internal).

- Other - This includes a bypass from any other vessel to the left renal artery. An example would include splenorenal bypass.

SEQ. #: 5378
Long Name: Visceral Vessel Management - Right Iliac
Short Name: RightIliac
Definition: Indicate management of the right iliac artery

Intent/Clarification: The intent is to clarify whether the right iliac artery was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Bifurcated Graft - If the right iliac artery is instrumented with an iliac limb extending from the main body of an abdominal aortic endograft (either bifurcated or aorto uni-iliac) and landing distally within the right iliac artery, then “Bifurcated Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- No flow restored

SEQ. #: 5379
Long Name: Visceral Vessel Management - Right Iliac - Extra-anatomic Bypass
Short Name: RightIliacExtraAnatByp
Definition: For right iliac vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Femoral - femoral - The extra-anatomic bypass was femoral to femoral. This would typically be a bypass from the left common femoral artery to the right common femoral artery.

- Other - This includes a bypass from any other vessel to the right iliac artery. An example would include aorto-iliac bypass.

SEQ. #: 5382
Long Name: Visceral Vessel Management - Left Iliac
Short Name: LeftIliac
Definition: Indicate management of the left iliac artery

Intent/Clarification: The intent is to clarify whether the left iliac artery was revascularized during an endovascular repair of the thoracic or thoracoabdominal aorta.

- Native flow - Native flow where no direct endo-intervention on the vessel was performed to improve blood flow. If the artery was left intact and continues to receive blood flow from the native aorta in the normal manner after the endovascular procedure, then “Native Flow” should be selected. This includes re-implantation of arch vessels directly onto a tube graft used for any type of arch replacement.

- Bifurcated Graft - If the right iliac artery is instrumented with an iliac limb extending from the main body of an abdominal aortic endograft (either bifurcated or aorto uni-iliac) and landing distally within the right iliac artery, then “Bifurcated Graft” should be selected.

- Extra-anatomic bypass - An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy Extra-anatomic bypasses which may be performed in a staged fashion (i.e. commonly an additional operation before the endovascular one, typically done during the same admission). An example would be bypassing any arch vessel originating from the ascending aortic graft using a separate prosthetic graft.

- No Flow Restored

SEQ. #: 5383
Long Name: Visceral Vessel Management - Left Iliac - Extra-anatomic Bypass
Short Name: LeftIliacExtraAnatBy
Definition: For left iliac vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Femoral - femoral - The extra-anatomic bypass was femoral to femoral. This would typically be a bypass from the right common femoral artery to the left common femoral artery.

- Other - This includes a bypass from any other vessel to the left iliac artery. An example would include aorto-iliac bypass

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SEQ. #: 5386
Long Name: Visceral Vessel Management - Internal Iliac Preserved
Short Name: IntIliacPres
Definition: Indicate whether the internal iliac was preserved.

Intent/Clarification: The intent is to clarify whether native antegrade flow is maintained within the internal iliac arteries during an endovascular repair of the thoracoabdominal aorta.

- Right iliac only
- Left iliac only
- Both
- No

SEQ. #: 5387
Long Name: Visceral Vessel Management - Other visceral Vessels Extra-Anatomic Bypass
Short Name: OthVisVes
Definition: Indicate whether extra-anatomic bypass of other visceral vessels was performed

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

This includes a bypass to any branch of the major visceral vessels such as the hepatic or splenic branches of the celiac axis, a bypass to the inferior mesenteric artery or accessory renal artery, or a bypass to another named visceral vessel other than the celiac, **superior mesenteric artery (**SMA) , left or right renal arteries.

SEQ. #: 5388
Long Name: Visceral Vessel Management - Other Visceral Vessel(s) Extra-anatomic Bypass - Location
Short Name: OthVisVesExtraAnatBypLoc
Definition: For other visceral vessel management, indicate the location of the extra-anatomic bypass location. If more than one location was bypass, select all that apply.

Intent/Clarification: An extra-anatomic bypass refers to any bypass graft that is placed outside of the normal anatomic vascular pathway to provide blood flow following or as part of that strategy.

- Aorta - other – The other extra-anatomic bypass included an aorta to other bypass. The bypass may originate from any segment of the aorta (e.g. ascending, descending, abdominal).
- Iliac - other – The other extra-anatomic bypass included an iliac to other bypass. The bypass may originate from any segment of the iliac artery (e.g. common, external, or internal).
- Other - This includes a bypass from any vessel other than the aorta or iliac artery to another named visceral vessel other than the celiac, **superior mesenteric**

artery (SMA), left or right renal arteries.

SEQ. #: 5400
Long Name: Planned Staged Hybrid
Short Name: PlanStagHybrid
Definition: Indicate whether the procedure was a planned staged hybrid

Intent/Clarification: The intent is to identify procedures that will involve a combination of open and endovascular procedures or devices. In particular, the combination of an open approach with stent grafts which can be deployed open or endovascularly. Staged procedure means that this will be done in more than one setting. For instance, two trips to the operating room or hybrid room.

Note: During the same episode of care, capture the TEVAR with the index procedure on the same data collection form. For example: The patient was initially scheduled for TEVAR but after a series of CT scans and manifestations of signs and symptoms, the surgeon opted to repair the ascending aortic flap first and then, 3 days later during the same episode of care, he took the patient back to the OR for the TEVAR. Code as a planned staged hybrid Seq 5400. Then capture the TEVAR accordingly in SEQ 5095. Use the OR times from the open procedure.

SEQ. #: 5401
Long Name: Dissection Proximal Entry Tear Covered
Short Name: DisProxTearCov
Definition: Indicate whether the proximal entry tear was covered.

Intent/Clarification:

- Yes - If the proximal entry tear (so-called primary tear) of an aortic dissection is fully covered by an aortic endograft then “Yes” should be selected.
- No

SEQ. #: 5402
Long Name: Endoleak At End Of Procedure
Short Name: EndoEndProc
Definition: Indicate whether there was endoleak present at the end of the procedure.

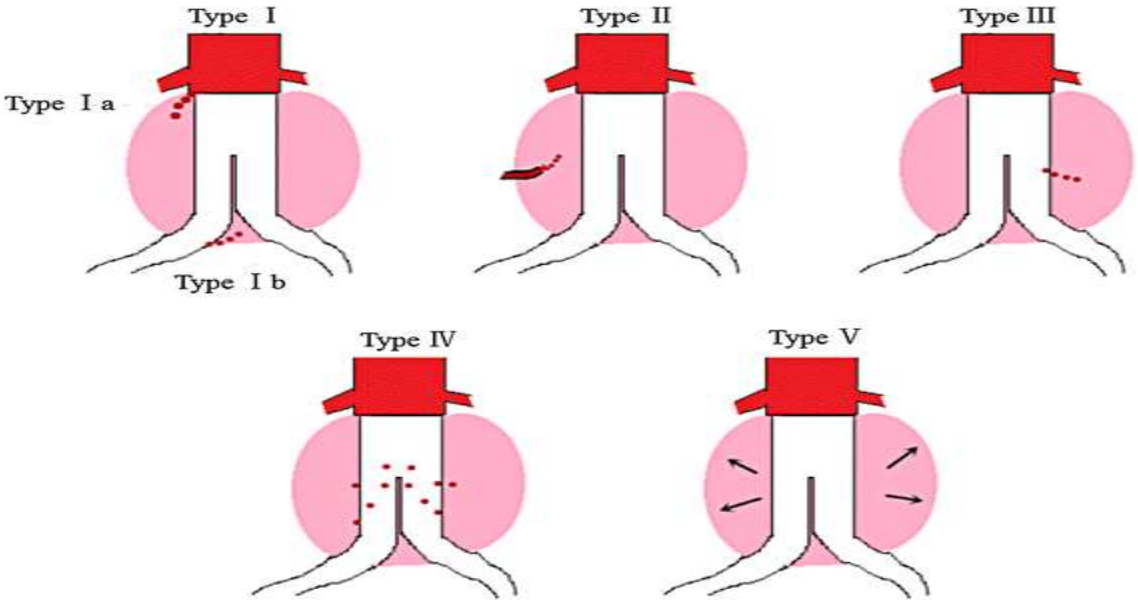
Intent/Clarification: The intent is to define whether an endoleak is noted at the completion of an endovascular repair before exiting the operating room. This would typically be determined by the surgeon’s assessment of the intraoperative completion angiogram.

An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 5403
Long Name: Endoleak At End Of Procedure - Type
Short Name: EndoEndProcTy
Definition: Indicate the type of endoleak present

Intent/Clarification: If an endoleak is noted at the completion of an endovascular repair before exiting the operating room, the intent is to define the type of endoleak present. This would typically be determined by the surgeon's assessment of the intraoperative completion angiogram.

- Ia - A Type Ia endoleak is defined as a leak occurring at the proximal seal zone.
- Ib - A Type Ib endoleak is defined as a leak occurring at the distal seal zone.
- II - A Type II endoleak is defined as retrograde filling of the aneurysm sac or false lumen in the case of dissection by aortic branch vessels (e.g. left subclavian artery, intercostal arteries, etc.).
- III – A Type III endoleak is defined as leakage of blood into the aneurysm sac, or false lumen in the case of dissection, due to either a gap between separate endograft components, or a defect in the fabric of the graft secondary to graft strut fracture or erosion.
- IV - A Type IV endoleak is defined as the presence of an endoleak secondary to graft porosity. All other types of endoleaks must be definitively ruled out prior to selecting this diagnosis.
- V - A Type V endoleak, also known as endotension, is defined as persistent aneurysm expansion in the absence of a confirmed endoleak.



SEQ. #: 5404
Long Name: Conversion To Open
Short Name: ConvToOpen
Definition: Indicate whether there was an unplanned conversion to an open procedure

Intent/Clarification: This includes any conversion to open surgery not pre-specified as part of the operative plan.

SEQ. #: 5405
Long Name: Conversion To Open - Reason
Short Name: ConvToOpenRes
Definition: Indicate the reason for conversion to open procedure

Intent/Clarification:

- Deployment failure - If the reason for open conversion was failure of an endograft to deploy, either partially or fully, such that the planned endovascular treatment could not be completed then “Deployment failure” should be selected.

- Endoleak - If the reason for open conversion is a persistent endoleak noted on completion angiogram then “Endoleak” should be selected.

- Rupture - If the aorta or a branch vessel ruptures intraoperatively requiring open conversion then “Rupture” should be selected.

- Occlusion / loss of branch - If partial or complete (occlusion) loss of antegrade flow within a branch vessel occurs and requires open conversion to restore flow then “Occlusion/loss of branch” should be selected.

SEQ. #: 5406
Long Name: Intraop Dissection Extension
Short Name: IntDisExten
Definition: Indicate whether there was intraoperative dissection extension

Intent/Clarification: If a pre-existing aortic dissection is made to propagate either proximally or distally beyond its preoperative extent during the operation, then extension of dissection has occurred.

- None

- Antegrade - If the pre-existing dissection extends distally (i.e. downstream towards the descending or abdominal aorta) beyond the original extent, then “Antegrade” should be selected

- Retrograde - If the pre-existing dissection extends proximally (i.e. back towards the aortic arch or ascending aorta) beyond the original extent, then “Retrograde” should be selected

- Both - If the pre-existing dissection extends both proximally and distally then “Both” should be selected.

SEQ. #: 5407
Long Name: Unintentional Rupture Of Dissection Septum
Short Name: UnintRup

Definition: Indicate whether there was unintentional rupture of the dissection septum

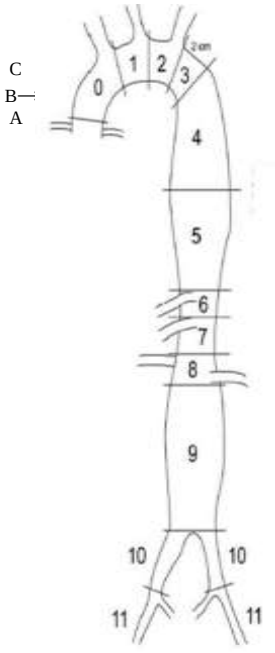
Intent/Clarification: The intent is to capture those instances where the dissection membrane/septum is unintentionally ruptured during an endovascular repair of an aortic dissection. This is typically due to the septum being fractured by a balloon or endograft, and the result is the creation of a new fenestration/connection between the true and false lumens of the dissection (so-called stent graft induced new entry tear (SINE)). This would typically be determined by the surgeon's assessment of the intraoperative completion angiogram, intravascular ultrasound, and/or transesophageal echocardiography.

It should be noted that in certain instances the surgeon may elect to intentionally fracture/rupture the dissection septum/membrane, typically using a balloon, and these cases should <u>not</u> be coded as unintentional rupture.

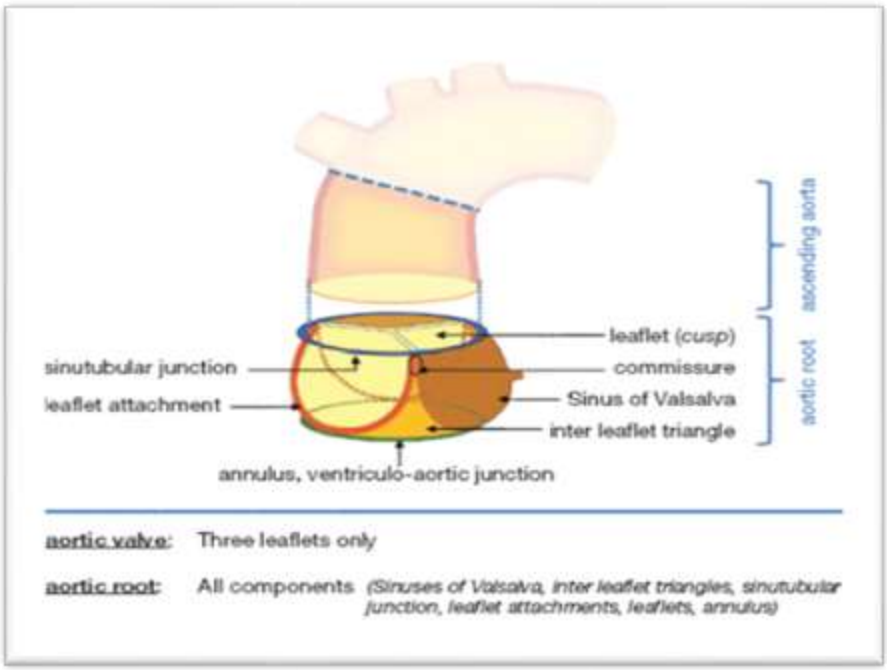
SEQ. #: 5408
Long Name: Unintentional Rupture Of Dissection Septum - Location
Short Name: UnintRupLoc
Definition: Indicate the location of the unintentional rupture of the dissection septum

Intent/Clarification: The exact aortic segment in which the unintentional rupture of the dissection septum occurred should be specified. This would typically be determined by the surgeon's assessment of the intraoperative completion angiogram, intravascular ultrasound, and/or transesophageal echocardiography.

Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ-mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5420
Long Name: Spinal Drain
Short Name: SpinalDrain
Definition: Indicate when/if a spinal drain was placed

Intent/Clarification: Indicate whether a cerebrospinal fluid drain was used for the thoracic aortic intervention. Cerebrospinal fluid (CSF) drainage is an adjunct to protect against paraplegia during aortic repairs. CSF pressure may increase during the perioperative period of aortic repair leading to paraplegia. High CSF pressure may reduce spinal cord blood perfusion. CSF drainage reduces CSF pressure promoting spinal cord blood perfusion, reducing the risk of paraplegia. This field will capture the use of the cerebrospinal fluid drain during aortic repair. This is most often placed by anesthesia. This will also include any failed attempt (mal-deployed).

- Pre-aortic procedure

- Post-aortic procedure

- None

SEQ. #: 5425
Long Name: IntraOp Motor Evoked Potential
Short Name: MotorEvoke
Definition: Indicate whether motor evoked potential (MEP) was measured intraoperatively

Intent/Clarification: Motor evoked potentials are used to monitor spinal cord function (motor cortex) during aortic intervention. Monitoring involves direct monitoring of electrical impulses used to stimulate the motor cortex and measurement of the response along the spinal cord. Changes in function during aortic intervention may indicate spinal cord injury. Adjunctive measures may be beneficial in restoring MEPs implying improvement in spinal cord function. It requires trained personnel, e.g. neurophysiologist, for monitoring. This will include unsuccessful attempts at the use of MEPs.

SEQ. #: 5426
Long Name: IntraOp Motor Evoked Potential - Documented MEP Abnormality
Short Name: MotorEvokeAb
Definition: Indicate whether any abnormality of motor evoked potential (MEP) was documented

Intent/Clarification: Motor evoked potentials are used to monitor spinal cord function (motor cortex) during aortic intervention. Monitoring involves direct monitoring of electrical impulses used to stimulate the motor cortex and measurement of the response along the spinal cord. Changes in function during aortic intervention may indicate spinal cord injury. Adjunctive measures may be beneficial in restoring MEPs implying improvement in spinal cord function. It requires trained personnel, e.g. neurophysiologist, for monitoring. This will include unsuccessful attempts at the use of MEPs.

SEQ. #: 5430
Long Name: IntraOp Somatosensory Evoked Potential
Short Name: SomatEvoke
Definition: indicate whether somatosensory evoked potential (SSEP) was measured intraoperatively

Intent/Clarification: Somatosensory evoked potentials are used to monitor spinal cord function (sensory function) during aortic intervention. Monitoring involves direct monitoring of electrical impulses used to stimulate the sensory ventral tracts and measurement of the sensory response along the spinal cord. Changes in function during aortic intervention may indicate spinal cord injury. Adjunctive measures may be beneficial in restoring SSEPs implying improvement in spinal cord function. SSEPs may be less sensitive than MEPs for spinal cord dysfunction. It requires trained personnel, e.g. neurophysiologist, for monitoring. This will include unsuccessful attempts at the use of SSEPs.

SEQ. #: 5431
Long Name: IntraOp Somatosensory Evoked Potential - Documented SEP Abnormality
Short Name: SomatEvokeAb
Definition: Indicate whether any abnormality of somatosensory evoked potential (SSEP) was documented

Intent/Clarification: Somatosensory evoked potentials are used to monitor spinal cord function (sensory function) during aortic intervention. Monitoring involves direct monitoring of electrical impulses used to stimulate the sensory ventral tracts and measurement of the sensory response along the spinal cord. Changes in function during aortic intervention may indicate spinal cord injury. Adjunctive measures may be beneficial in restoring SSEPs implying improvement in spinal cord function. SSEPs may be less sensitive than MEPs for spinal cord dysfunction. It requires trained personnel, e.g. neurophysiologist, for monitoring. This will include unsuccessful attempts at the use of SSEPs.

SEQ. #: 5432
Long Name: IntraOp EEG
Short Name: IntraOpEEG
Definition: Indicate whether EEG was monitored intraoperatively

Intent/Clarification: Intraoperative electroencephalography (EEG) may be used to monitor overall brain function during thoracic aortic procedures. Like MEPs and SSEPs, it requires trained personnel, e.g. neurophysiologist, for monitoring.
This will include unsuccessful attempts at the use of IntraOp/EEG.

Intraoperative bispectral index monitoring (BIS) is not the same as use of IntraOp/EEG and is not captured in this field.

SEQ. #: 5433
Long Name: IntraOp EEG - Documented EEG Abnormality
Short Name: IntraOpEEGAb
Definition: Indicate whether any abnormality of intraoperative EEG was documented

Intent/Clarification: Intraoperative electroencephalography (EEG) may be used to monitor overall brain function during thoracic aortic procedures. Like MEPs and SSEPs, it requires trained personnel, e.g. neurophysiologist, for monitoring.
This will include unsuccessful attempts at the use of IntraOp/EEG.

FAQ September 2020 - If the intra-op EEG in a circ arrest case is documented as "isoelectric activity" is this coded as "yes" for documented EEG abnormality? Answer – Do not code as Yes for documented EEG abnormality in this scenario. An isoelectric EEG is abnormal, but it is “normal” for patients undergoing circulatory arrest.

SEQ. #: 5434
Long Name: IntraOp Intravascular Ultrasound (IVUS)
Short Name: IntraOpIVUS
Definition: indicate whether intravascular ultrasound was used intraoperatively

Intent/Clarification: The use of IVUS is during the actual aorta procedure not IVUS used only to obtain percutaneous access. The unique point-of-view picture, generated in real time, yielding information that goes beyond what is possible with routine imaging methods, such as coronary angiography, performed in the Cath lab, or even non-invasive multi-slice CT scans.

SEQ. #: 5435
Long Name: IntraOp Transcutaneous Doppler
Short Name: TransDoppler
Definition: Indicate whether a transcutaneous Doppler was used intraoperatively

Intent/Clarification: Transcutaneous Doppler enables the surgeon to alter his or her approach depending on the size and the location of aortic atheromatous burden and provides an opportunity for intervention guidance during aortic cannulation, cross clamping and aortotomy.

SEQ. #: 5436
Long Name: IntraOp Angiogram
Short Name: IntraOpAng
Definition: Indicate whether an intraoperative angiogram was performed

Intent/Clarification: An intraoperative angiography allows the surgeon to inspect the anatomic results of the surgical procedure.

SEQ. #: 5437
Long Name: IntraOp Angiogram - Volume Of Contrast
Short Name: IntraOpAngVol
Definition: Indicate the total volume of contrast given intraoperatively.

Intent/Clarification: The volume of contrast used during the intraoperative angiogram documented in the perioperative record, the operative dictation, or the Cath Lab event log.

SEQ. #: 5438
Long Name: IntraOp Angiogram - Fluoroscopy Time In Minutes
Short Name: IntraOpAngFlTm
Definition: Indicate the total intraoperative fluoroscopy time in minutes.

Intent/Clarification: The total number of minute’s intraoperative fluoroscopy documented in the perioperative record, the operative dictation, or the Cath Lab event log.

SEQ. #: 5439
Long Name: Endovascular Balloon Fenestration of the Dissection Flap
Short Name: EndoBalFenDisFlap

Definition: Indicate if endovascular balloon fenestration of the dissection flap was performed. If not, select N/A. Data

Intent/Clarification:

- PreOp
- IntraOp
- PostOp
- N/A

SEQ. #: 5440
Long Name: Aorta Device Inserted
Short Name: ADevIns
Definition: Indicate whether one or more devices were inserted into the aorta or aortic position (for combined procedures).

Intent/Clarification: For section M2, 'device' refers to any implanted material within the **Update July 2020 aortic valve for combined aorta and aortic valve procedures** and the aorta; grafts or stent-grafts. This will include all synthetic prosthetics inserted. This may include Dacron, PTFE, homografts, autografts, stents, stent-grafts, and **Update September 2020 patch grafts**. Do not capture the felt or Bioglue. Some aortic interventions may not require prosthetic materials or device implants such as primary repair of a pseudoaneurysm. This will be indicated as "No." **Update July 2020 Ross procedure with autograft capture in SEQ 4966 and for SEQ 5440 code as No to devices inserted.**

- Yes
- No

Example: The surgeon performed an open elephant trunk and the graft material covered the left subclavian. Therefore, he fenestrated the graft and stented into the left subclavian. This should be captured as "Arch Reimplantation" (seq 4995) 'yes' and "Left Subclavian" (seq 4996) 'yes.' Capture the graft material in the device section, but you do not need to capture the stent in the device section.

SEQ. #: 5441
Long Name: Aortic Valve or Aortic Valve Composite Graft Implanted
Short Name: AVAVCompGraftImplAo
Definition: Indicate if an aortic valve or an aortic valve composite graft was implanted.

Intent/Clarification:

- Yes
- No

SEQ. #: 5442
Long Name: Aortic Valve or Aortic Valve Composite Graft Implanted - Model Number
Short Name: AVAVCompGrImplModelAo
Definition: Indicate the model number of the aortic valve or aortic valve composite graft.

Intent/Clarification: Indicate the name of the prosthesis implanted. The names provided include the manufacturer's model number with "xx" substituting for the device size.

Choose the device type from the device list. The device list will only be updated by the vendors with the specification / version upgrades. Devices not listed should be entered as “Other – FDA approved” or “Other Non-FDA approved” devices. Entering the unique device identifier (UDI) will allow for valve identification.

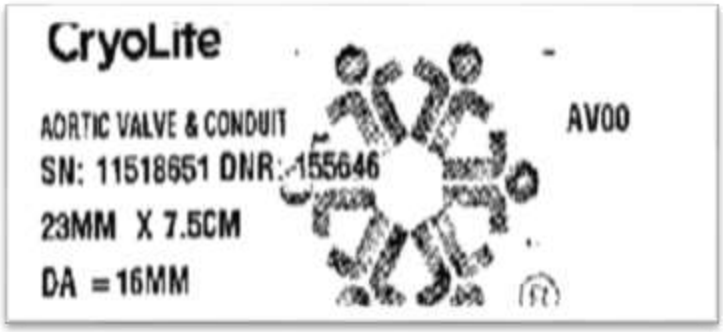
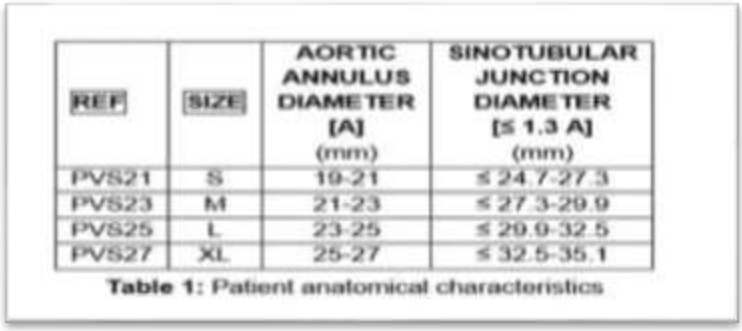


Figure 5 AV00 = Model Number

SEQ. #: 5443
Long Name: Aortic Valve or Aortic Valve Composite Graft Implanted - Size
Short Name: AVAVCompGrImplSizeAo
Definition: Indicate the size of the aortic valve or aortic valve composite graft. For composite grafts record the size of the valve.

Intent/Clarification: ON-X valves with sizes such as 27/29 are coded as a 27.

The Perceval Sutureless Valve comes in 4 sizes, S, M, L, XL. Code the size of the last digits in the model number. For example, PSV23 will be coded as 23.



REF	SIZE	AORTIC ANNULUS DIAMETER [A] (mm)	SINOTUBULAR JUNCTION DIAMETER [≤ 1.3 A] (mm)
PVS21	S	19-21	≤ 24.7-27.3
PVS23	M	21-23	≤ 27.3-29.9
PVS25	L	23-25	≤ 29.9-32.5
PVS27	XL	25-27	≤ 32.5-35.1

Table 1: Patient anatomical characteristics

Figure 6 REF = Model Number

SEQ. #: 5444
Long Name: Aortic Valve or Aortic Valve Composite Graft Implanted - Unique Device Identifier
Short Name: AVAVCompGrImplUDIAo
Definition: Indicate the UDI of the aortic valve or aortic valve composite graft.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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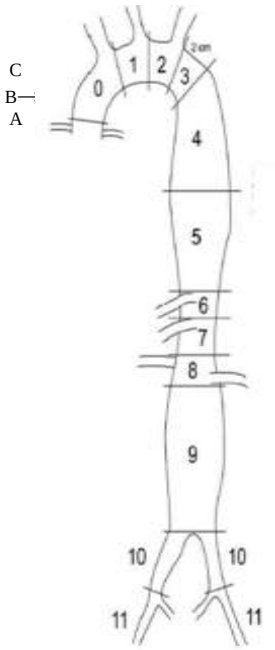
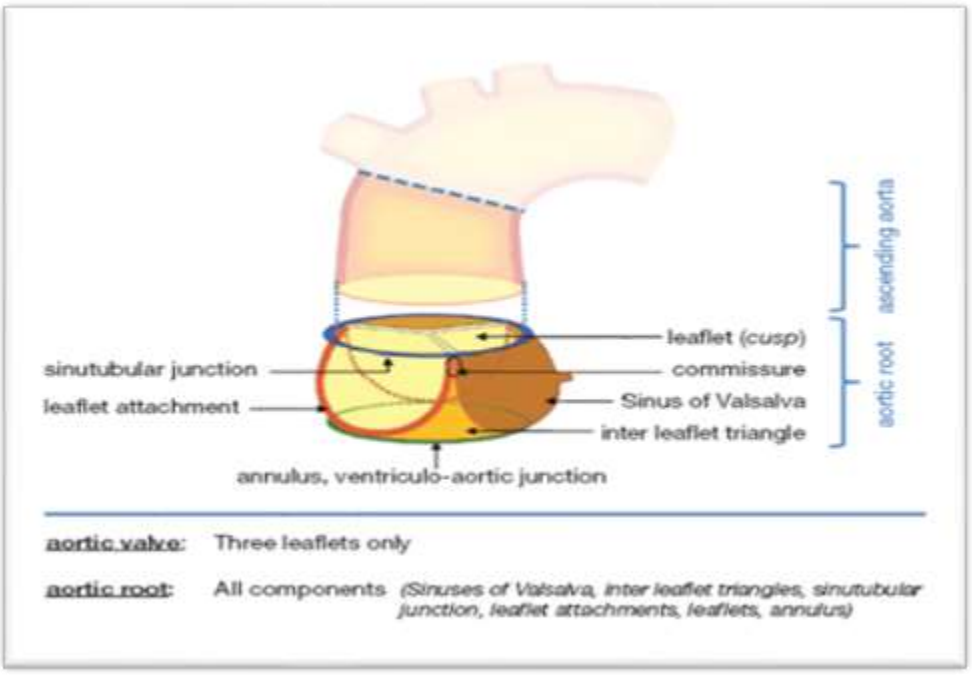
SEQ. #: 5450
Long Name: Aorta Device - Location #01
Short Name: ADevLoc01
Definition: Indicate the location within the aorta where device #01 was inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ - mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5455
Long Name: Aorta Device - Delivery Method #01
Short Name: ADevDelMeth01
Definition: Indicate the delivery method used to insert device #01 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5460
Long Name: Aorta Device - Outcome #01
Short Name: ADevOut01
Definition: Indicate the outcome of the attempt to insert device #01.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and malalignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as "DelivMeth/deploy/remove."
- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as "DelivMeth/deploy/remove."
- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5465
Long Name: Aorta Device - Model Number #01
Short Name: ADevModel01
Definition: Indicate the model number of aorta device #01.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

Figure 7 REF = Model Number

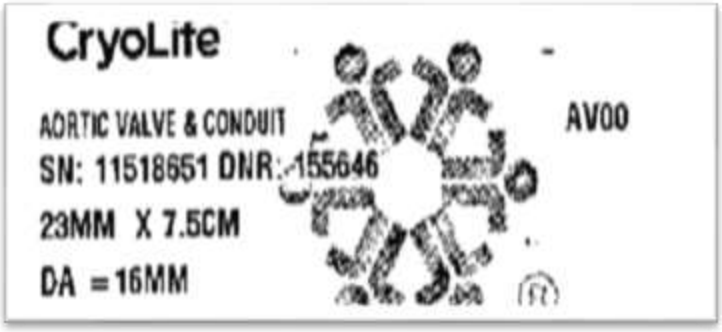


Figure 8 AV00 = Model Number

SEQ. #: 5470
Long Name: Aorta Device - Unique Device Identifier #01
Short Name: ADevUDI01
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #01 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

UDI Numbers - UDI Numbers - There is no internet link that will provide you with an UDI. The UDI's are device specific which means they are unique for each device implanted into each patient. No two devices will have the same UDI. See the below image for what an UDI number looks like. The UDI is made up of 5 different identifiers and each identifier is preceded by a number in parentheses (e.g (GIN (01) #; Expiration Date (17); Manufacturing Date (11); Lot number (10) AND Serial number (21)). It is necessary to enter all the characters, including the parentheses, into the database so the FDA can identify each unique device.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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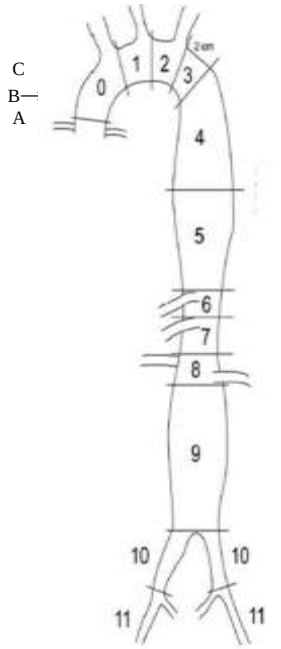
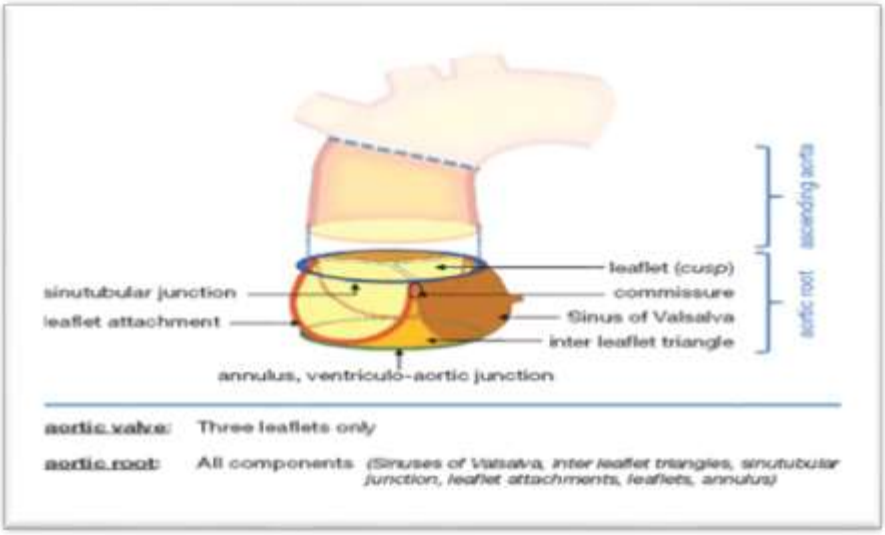
SEQ. #: 5475
Long Name: Aorta Device - Location #02
Short Name: ADevLoc02

Definition: Indicate the location within the aorta where device #02 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ - mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal

tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5480
Long Name: Aorta Device - Delivery Method #02
Short Name: ADevDelMeth02
Definition: Indicate the delivery method used to insert device #02 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5485
Long Name: Aorta Device - Outcome #02
Short Name: ADevOut02
Definition: Indicate the outcome of the attempt to insert device #02.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5490

Long Name: Aorta Device - Model Number #02

Short Name: ADevModel02

Definition: Indicate the model number of aorta device #02.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5495
Long Name: Aorta Device - Unique Device Identifier #02
Short Name: ADevUDI02
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #02 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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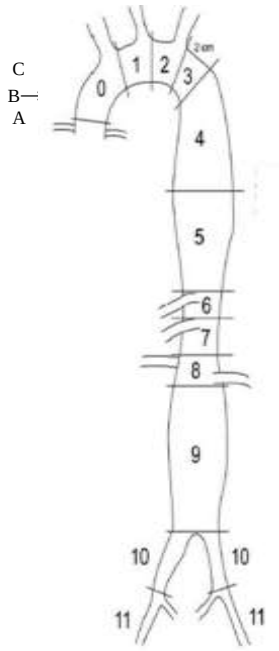
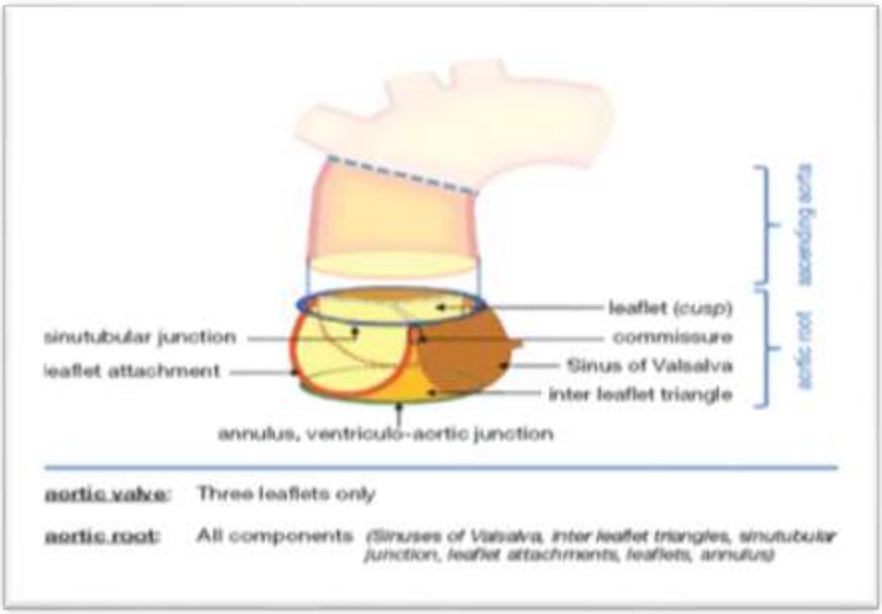
SEQ. #: 5500
Long Name: Aorta Device - Location #03
Short Name: ADevLoc03
Definition: Indicate the location within the aorta where device #03 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ - mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between

the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).
- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).
- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).
- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).
- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).
- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).
- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).
- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).
- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).
- Zone 10 is the common iliac arteries (see figure).
- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5505
Long Name: Aorta Device - Delivery Method #03
Short Name: ADevDelMeth03
Definition: Indicate the delivery method used to insert device #03 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5510
Long Name: Aorta Device - Outcome #03
Short Name: ADevOut03
Definition: Indicate the outcome of the attempt to insert device #03.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5515

Long Name: Aorta Device - Model Number #03
Short Name: ADevModel03
Definition: Indicate the model number of aorta device #03.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5520
Long Name: Aorta Device - Unique Device Identifier #03 **Short Name:** ADevUDI03
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #03 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

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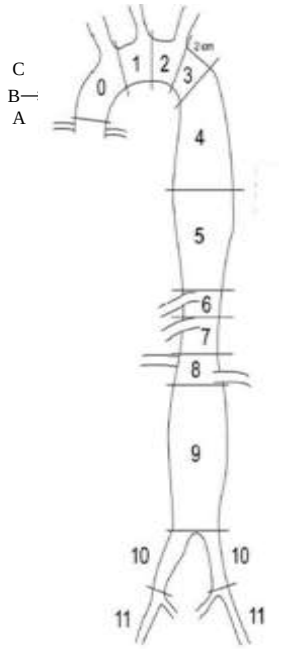
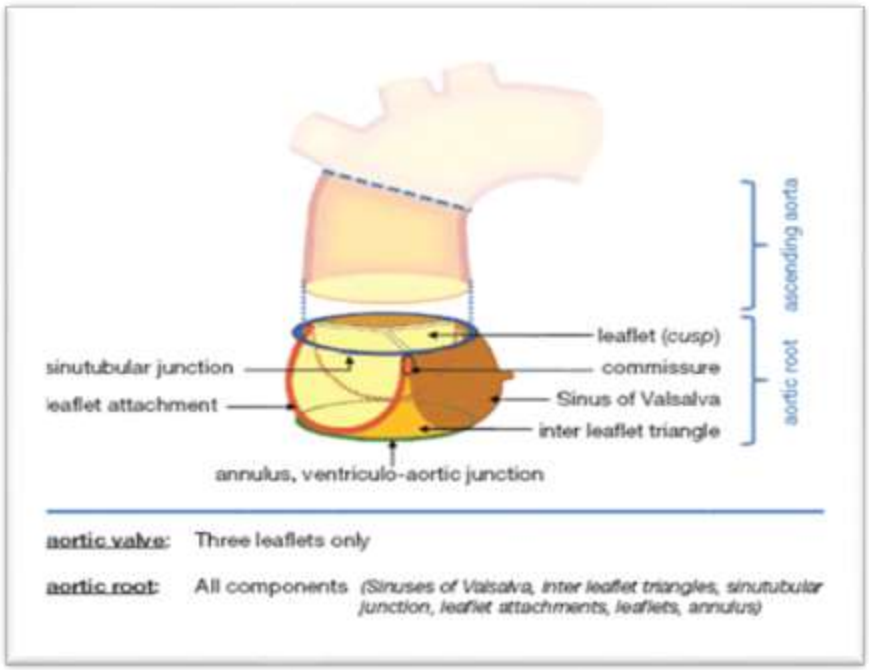
SEQ. #: 5525
Long Name: Aorta Device - Location #04
Short Name: ADevLoc04
Definition: Indicate the location within the aorta where device #04 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ - mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5530
Long Name: Aorta Device - Delivery Method #04
Short Name: ADevDelMeth04
Definition: Indicate the delivery method used to insert device #04 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5535

Long Name: Aorta Device - Outcome #04
Short Name: ADevOut04

Definition: Indicate the outcome of the attempt to insert device #04.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as "DelivMeth/deploy/remove."

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as "DelivMeth/deploy/remove."

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5540
Long Name: Aorta Device - Model Number #04
Short Name: ADevModel04
Definition: Indicate the model number of aorta device #04.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5545
Long Name: Aorta Device - Unique Device Identifier #04
Short Name: ADevUDI04
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #04 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_

campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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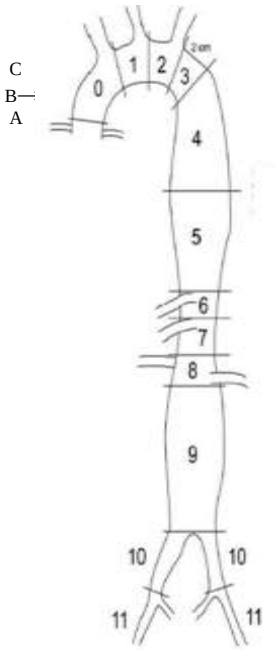
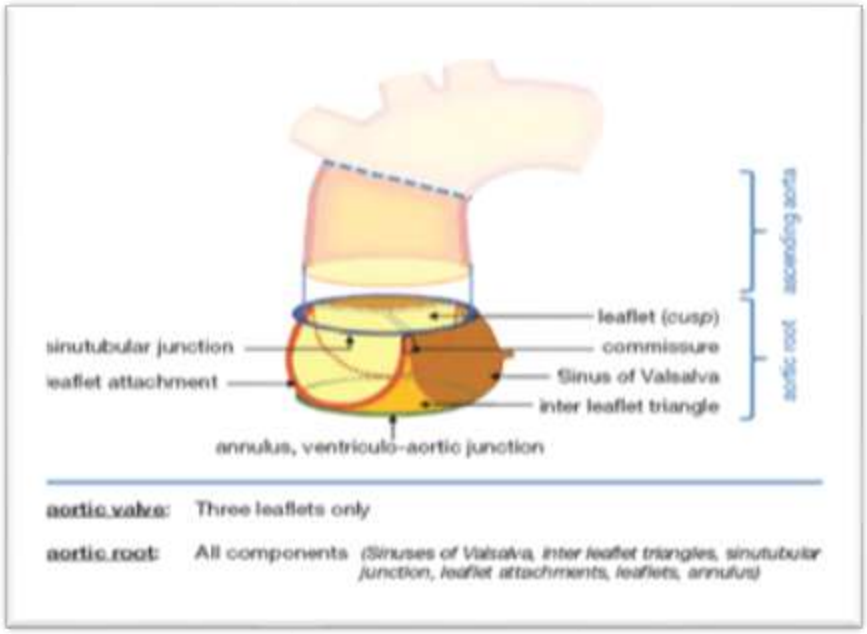
SEQ. #: 5550
Long Name: Aorta Device - Location #05
Short Name: ADevLoc05
Definition: Indicate the location within the aorta where device #05 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ - mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5555
Long Name: Aorta Device - Delivery Method #05
Short Name: ADevDelMeth05
Definition: Indicate the delivery method used to insert device #05 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5560
Long Name: Aorta Device - Outcome #05
Short Name: ADevOut05
Definition: Indicate the outcome of the attempt to insert device #05.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5565
Long Name: Aorta Device - Model Number #05
Short Name: ADevModel05
Definition: Indicate the model number of aorta device #05.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5570
Long Name: Aorta Device - Unique Device Identifier #05
Short Name: ADevUDI05
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #05 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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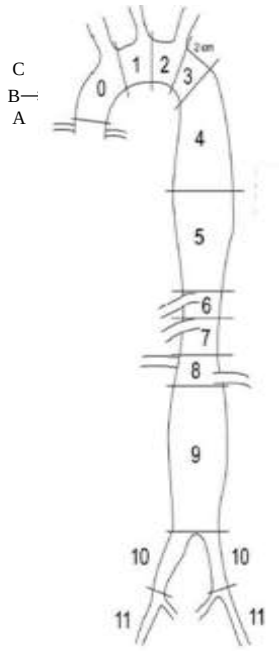
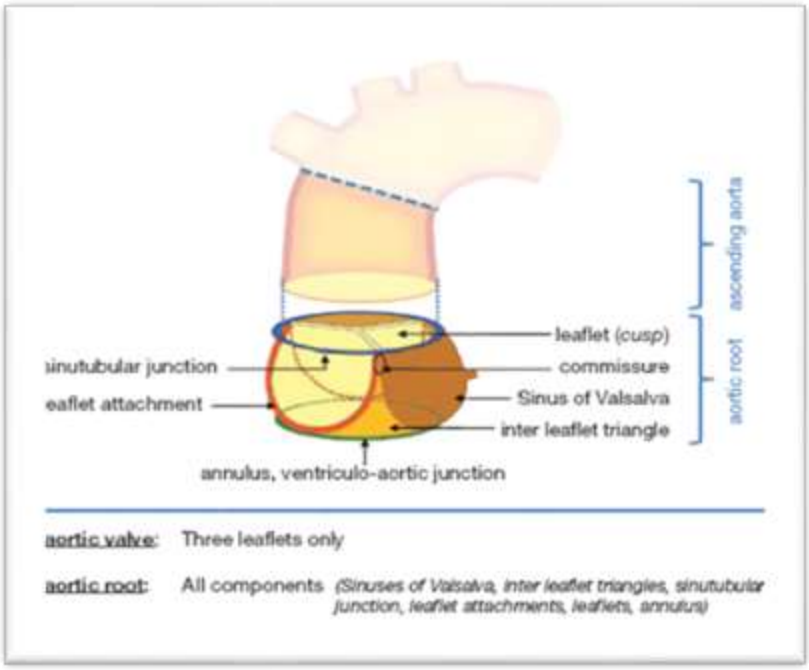
SEQ. #: 5575
Long Name: Aorta Device - Location #06
Short Name: ADevLoc06
Definition: Indicate the location within the aorta where device #06 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5580
Long Name: Aorta Device - Delivery Method #06
Short Name: ADevDelMeth06
Definition: Indicate the delivery method used to insert device #06 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5585
Long Name: Aorta Device - Outcome #06
Short Name: ADevOut06
Definition: Indicate the outcome of the attempt to insert device #06.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5590
Long Name: Aorta Device - Model Number #06
Short Name: ADevModel06
Definition: Indicate the model number of aorta device #06.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5595
Long Name: Aorta Device - Unique Device Identifier #06
Short Name: ADevUDI06

Definition: Indicate the Unique Device Identifier (UDI) of aorta device #06 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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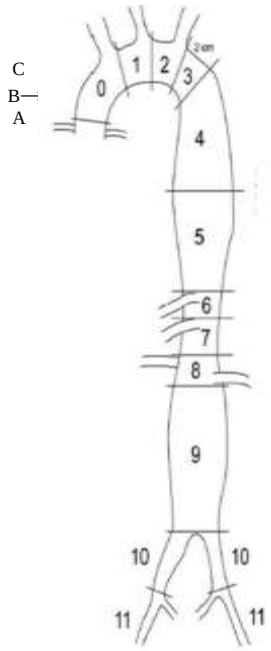
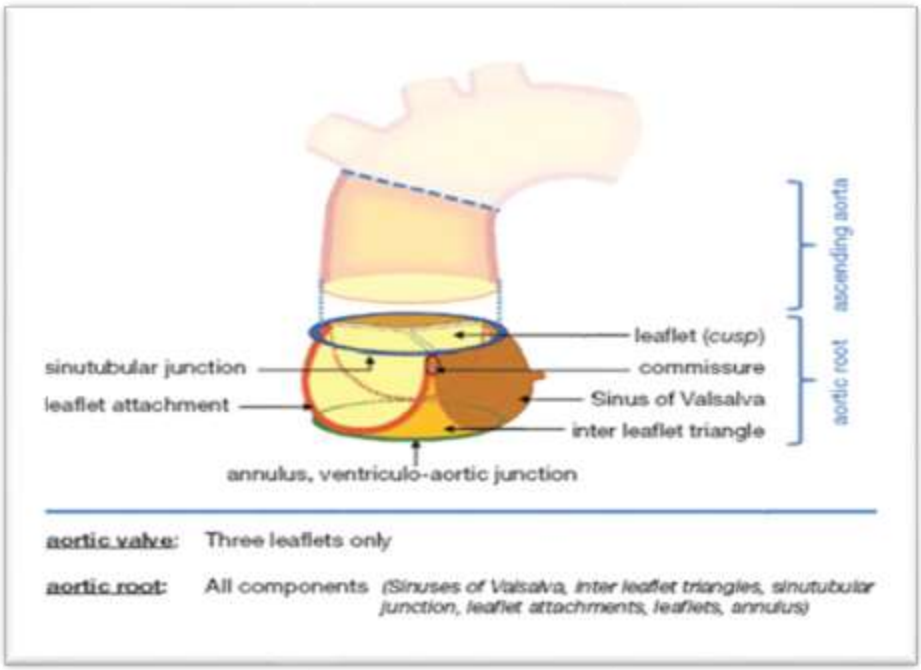
SEQ. #: 5600
Long Name: Aorta Device - Location #07
Short Name: ADevLoc07
Definition: Indicate the location within the aorta where device #07 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5605
Long Name: Aorta Device - Delivery Method #07
Short Name: ADevDelMeth07
Definition: Indicate the delivery method used to insert device #07 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5610
Long Name: Aorta Device - Outcome #07
Short Name: ADevOut07
Definition: Indicate the outcome of the attempt to insert device #07.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as "DelivMeth/deploy/remove."

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as "DelivMeth/deploy/remove."

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5615
Long Name: Aorta Device - Model Number #07
Short Name: ADevModel07
Definition: Indicate the model number of aorta device #07.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5620
Long Name: Aorta Device - Unique Device Identifier #07
Short Name: ADevUDI07
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #07 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

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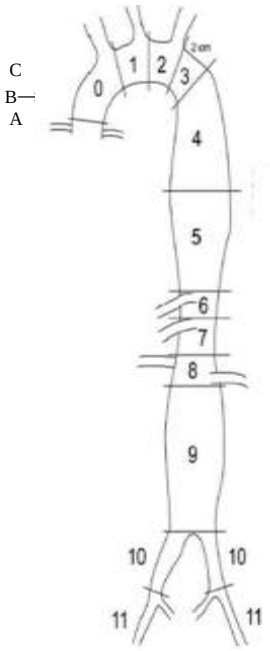
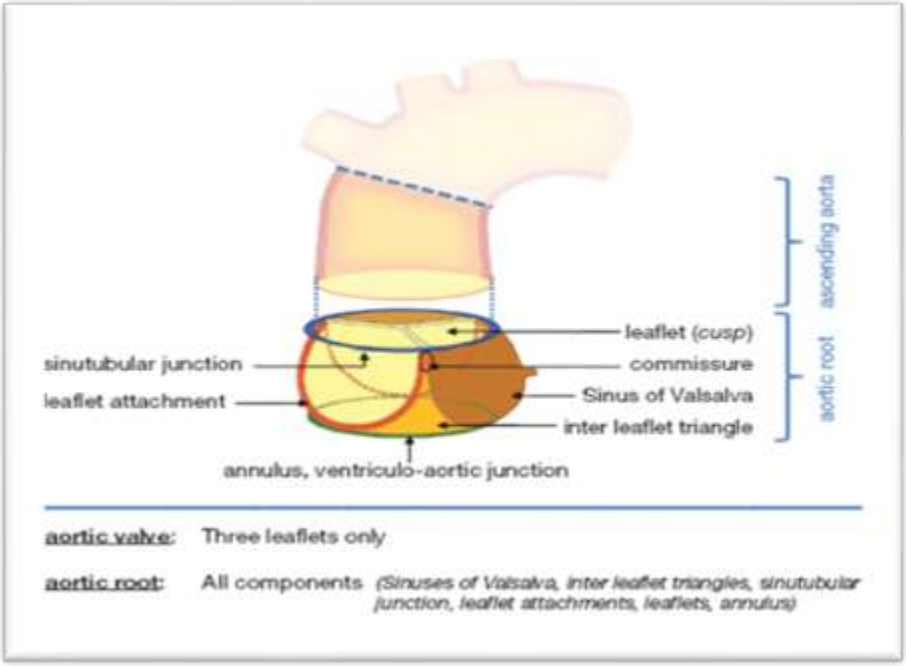
SEQ. #: 5625
Long Name: Aorta Device - Location #08
Short Name: ADevLoc08
Definition: Indicate the location within the aorta where device #08 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5630
Long Name: Aorta Device - Delivery Method #08
Short Name: ADevDelMeth08
Definition: Indicate the delivery method used to insert device #08 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5635
Long Name: Aorta Device - Outcome #08
Short Name: ADevOut08
Definition: Indicate the outcome of the attempt to insert device #08.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5640
Long Name: Aorta Device - Model Number #08
Short Name: ADevModel08
Definition: Indicate the model number of aorta device #08.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5645
Long Name: Aorta Device - Unique Device Identifier #08
Short Name: ADevUDI08
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #08 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

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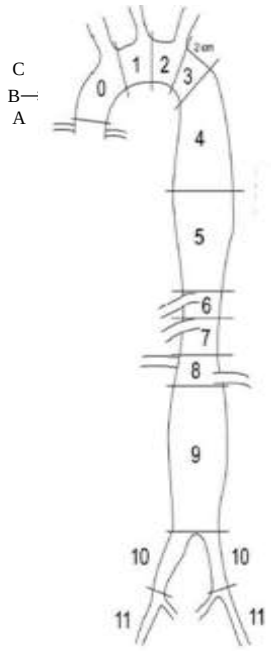
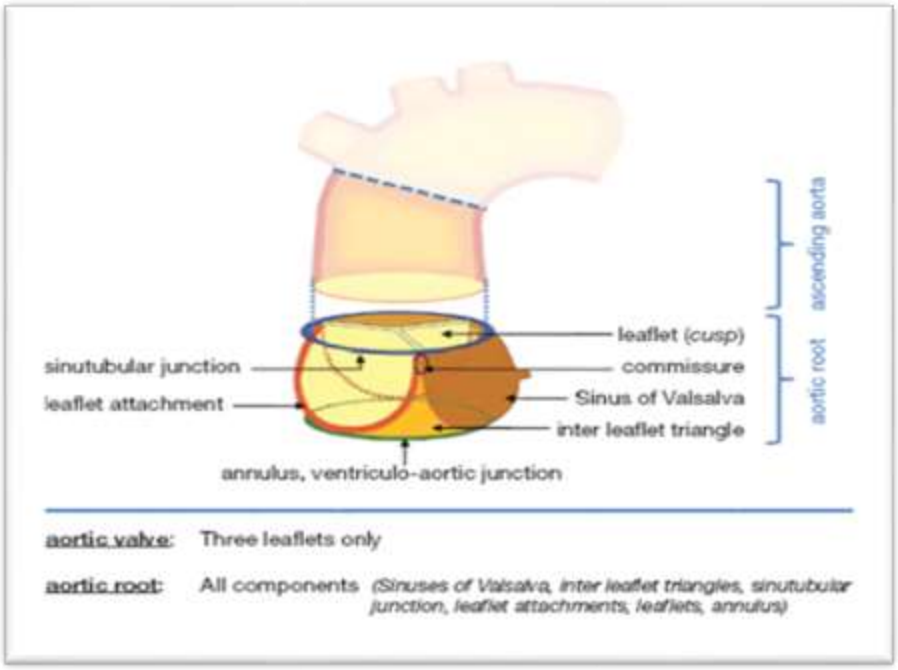
SEQ. #: 5650
Long Name: Aorta Device - Location #09
Short Name: ADevLoc09
Definition: Indicate the location within the aorta where device #09 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending-distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5655
Long Name: Aorta Device - Delivery Method #09
Short Name: ADevDelMeth09
Definition: Indicate the delivery method used to insert device #09 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5660
Long Name: Aorta Device - Outcome #09
Short Name: ADevOut09
Definition: Indicate the outcome of the attempt to insert device #09.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5665
Long Name: Aorta Device - Model Number #09
Short Name: ADevModel09
Definition: Indicate the model number of aorta device #09.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5670
Long Name: Aorta Device - Unique Device Identifier #09
Short Name: ADevUDI09

Definition: Indicate the Unique Device Identifier (UDI) of aorta device #09 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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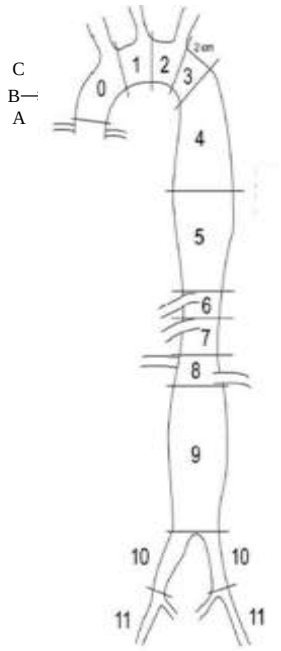
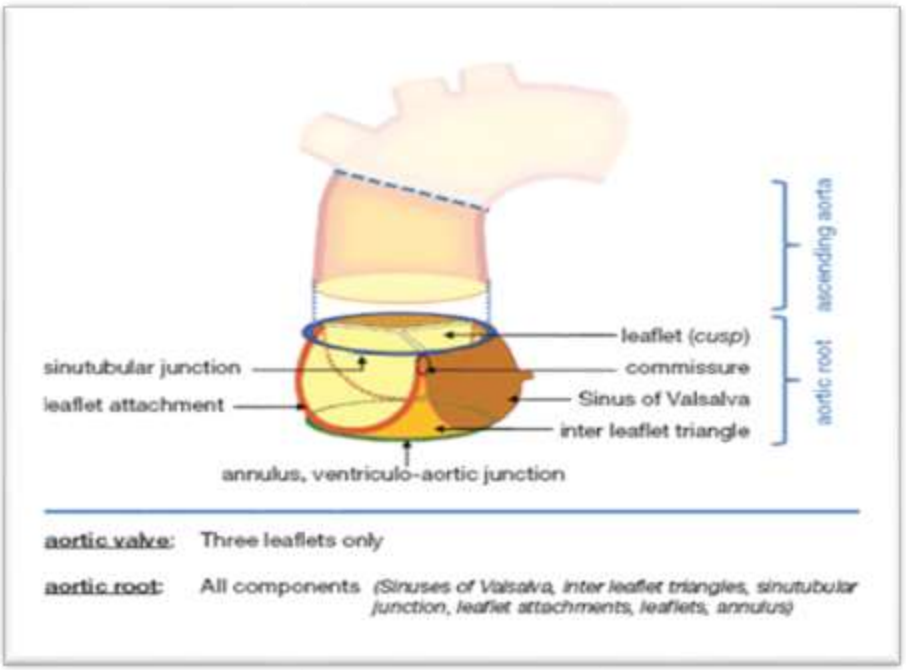
SEQ. #: 5675
Long Name: Aorta Device - Location #10
Short Name: ADevLoc10
Definition: Indicate the location within the aorta where device #10 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5680
Long Name: Aorta Device - Delivery Method #10
Short Name: ADevDelMeth10
Definition: Indicate the delivery method used to insert device #10 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5685
Long Name: Aorta Device - Outcome #10
Short Name: ADevOut10
Definition: Indicate the outcome of the attempt to insert device #10.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as "DelivMeth/deploy/remove."

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as "DelivMeth/deploy/remove."

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5690
Long Name: Aorta Device - Model Number #10
Short Name: ADevModel10
Definition: Indicate the model number of aorta device #10.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5695
Long Name: Aorta Device - Unique Device Identifier #10
Short Name: ADevUDI10
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #10 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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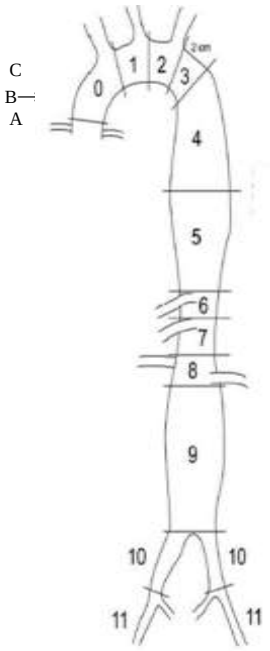
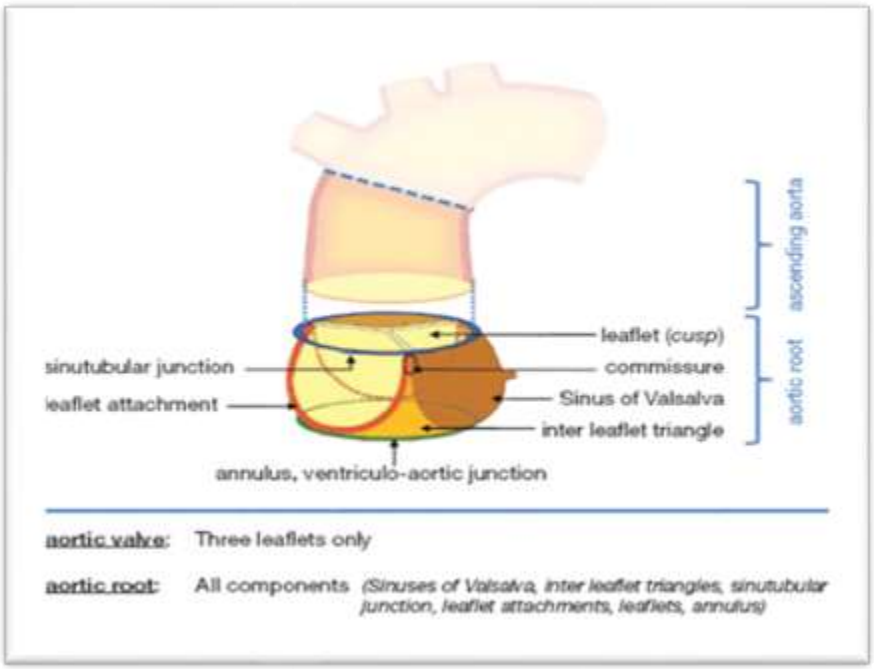
SEQ. #: 5700
Long Name: Aorta Device - Location #11
Short Name: ADevLoc11
Definition: Indicate the location within the aorta where device #11 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5705
Long Name: Aorta Device - Delivery Method #11
Short Name: ADevDelMeth11
Definition: Indicate the delivery method used to insert device #11 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5710
Long Name: Aorta Device - Outcome #11
Short Name: ADevOut11
Definition: Indicate the outcome of the attempt to insert device #11.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5715
Long Name: Aorta Device - Model Number #11
Short Name: ADevModel11
Definition: Indicate the model number of aorta device #11.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5720
Long Name: Aorta Device - Unique Device Identifier #11
Short Name: ADevUDI11
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #11 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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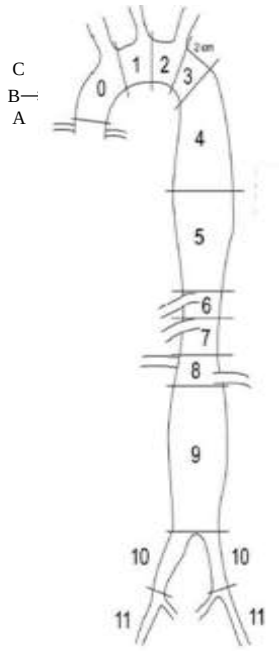
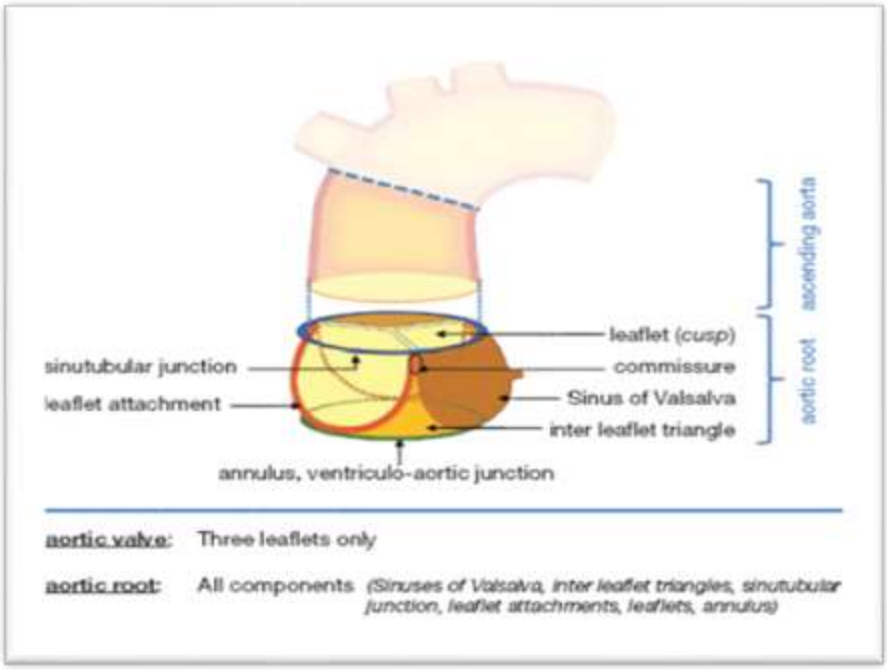
SEQ. #: 5725
Long Name: Aorta Device - Location #12
Short Name: ADevLoc12
Definition: Indicate the location within the aorta where device #12 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5730
Long Name: Aorta Device - Delivery Method #12
Short Name: ADevDelMeth12
Definition: Indicate the delivery method used to insert device #12 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5735
Long Name: Aorta Device - Outcome #12
Short Name: ADevOut12
Definition: Indicate the outcome of the attempt to insert device #12.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5740
Long Name: Aorta Device - Model Number #12
Short Name: ADevModel12
Definition: Indicate the model number of aorta device #12.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5745
Long Name: Aorta Device - Unique Device Identifier #12
Short Name: ADevUDI12

Definition: Indicate the Unique Device Identifier (UDI) of aorta device #12 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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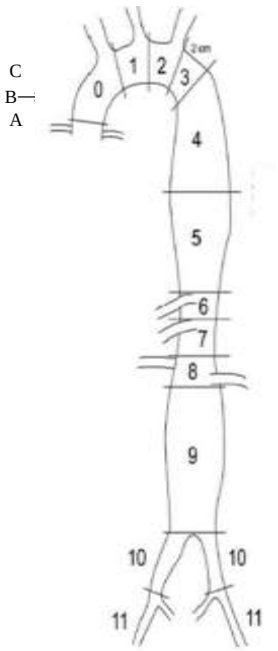
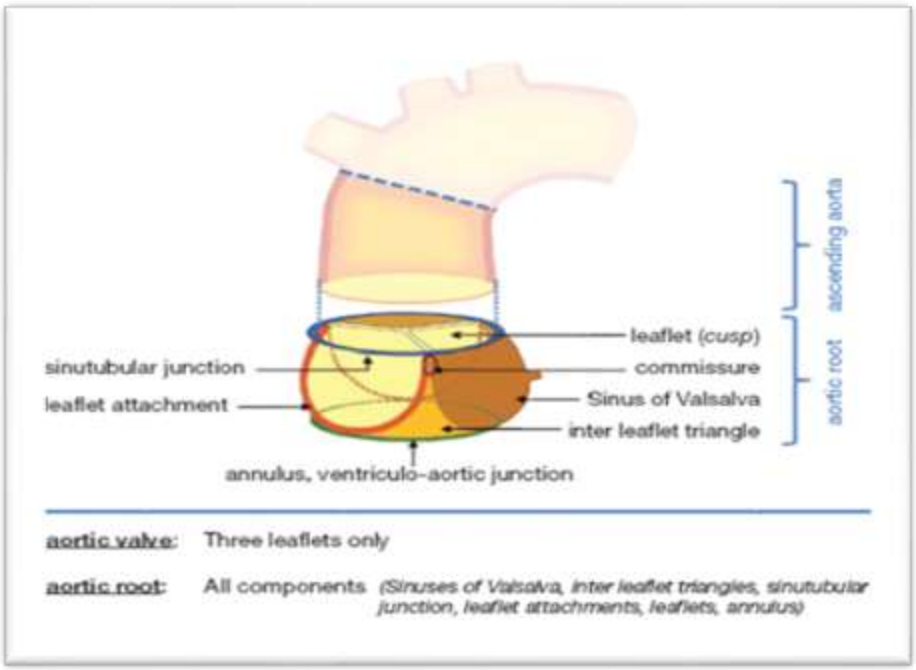
SEQ. #: 5750
Long Name: Aorta Device - Location #13
Short Name: ADevLoc13
Definition: Indicate the location within the aorta where device #13 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5755
Long Name: Aorta Device - Delivery Method #13
Short Name: ADevDelMeth13
Definition: Indicate the delivery method used to insert device #13 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5760
Long Name: Aorta Device - Outcome #13
Short Name: ADevOut13
Definition: Indicate the outcome of the attempt to insert device #13.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as "DelivMeth/deploy/remove."

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as "DelivMeth/deploy/remove."

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5765
Long Name: Aorta Device - Model Number #13
Short Name: ADevModel13
Definition: Indicate the model number of aorta device #13.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5770
Long Name: Aorta Device - Unique Device Identifier #13
Short Name: ADevUDI13
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #13 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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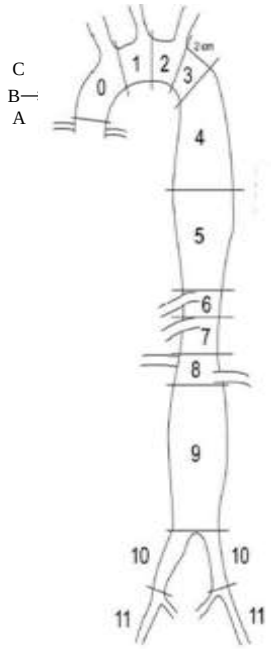
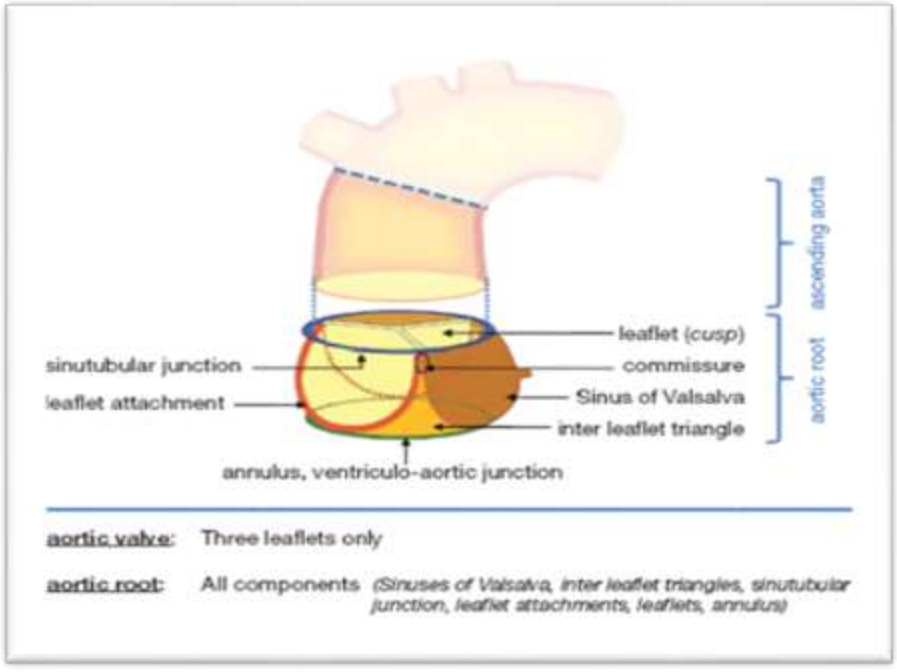
SEQ. #: 5775
Long Name: Aorta Device - Location #14
Short Name: ADevLoc14
Definition: Indicate the location within the aorta where device #14 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)
N. Zone 11 (external iliacs)



Note: Zone “0” is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5780
Long Name: Aorta Device - Delivery Method #14
Short Name: ADevDelMeth14
Definition: Indicate the delivery method used to insert device #14 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5785
Long Name: Aorta Device - Outcome #14
Short Name: ADevOut14
Definition: Indicate the outcome of the attempt to insert device #14.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5790
Long Name: Aorta Device - Model Number #14
Short Name: ADevModel14
Definition: Indicate the model number of aorta device #14.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5795
Long Name: Aorta Device - Unique Device Identifier #14
Short Name: ADevUDI14
Definition: Indicate the Unique Device Identifier (UDI) of aorta device #14 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email
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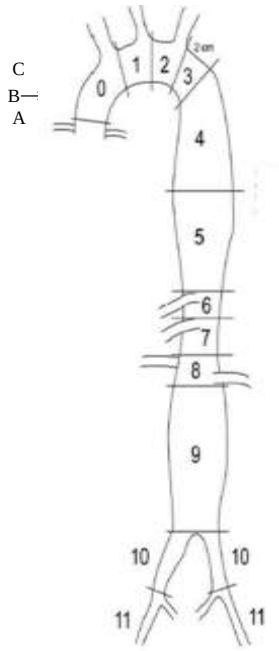
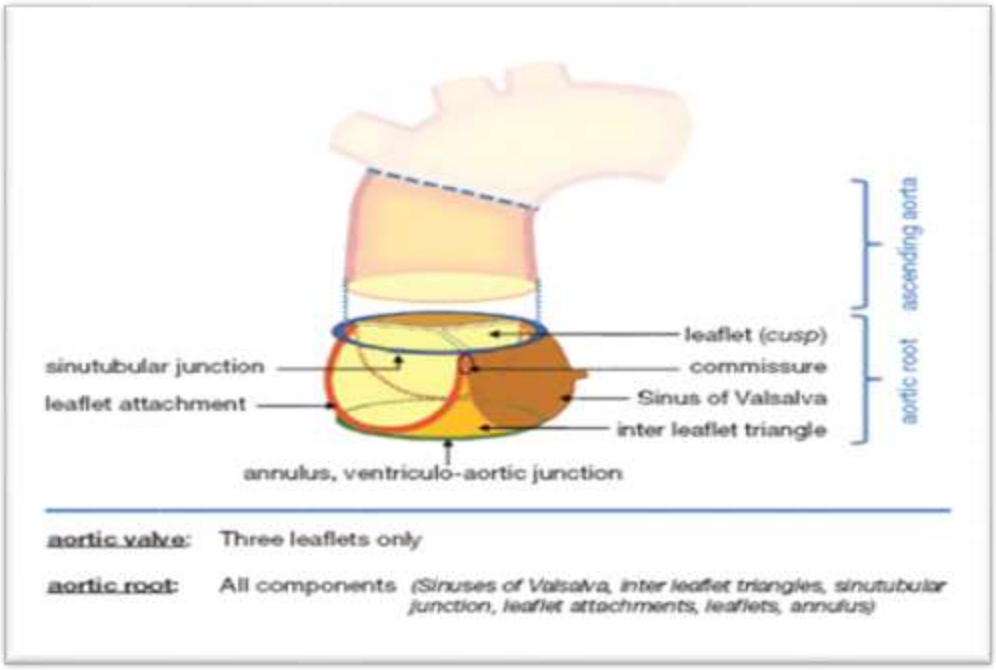
SEQ. #: 5800
Long Name: Aorta Device - Location #15
Short Name: ADevLoc15
Definition: Indicate the location within the aorta where device #15 was inserted or indicate that no additional devices were inserted.

Intent/Clarification: In the device section you enter the zones the implant covers, both proximal and distal. Therefore, the information for implant method, outcome, model number, and UDI is being entered twice in the device section.



A. Below sinotubular junction
B. Sinotubular junction to mid ascending
C. Mid ascending to distal ascending
D. Zone 1 (between innominate and left carotid)
E. Zone 2 (between left carotid and left subclavian)
F. Zone 3 (first 2 cm. distal to left subclavian)
G. Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H. Zone 5 (mid descending aorta to celiac)
I. Zone 6 (celiac to superior mesenteric)
J. Zone 7 (superior mesenteric to renals)
K. Zone 8 (renal to infra-renal abdominal aorta)
L. Zone 9 (infrarenal abdominal aorta)
M. Zone 10 (common iliac)

N. Zone 11 (external iliacs)



Note: Zone "0" is subdivided into 3 sections: Below sinotubular junction, sinotubular junction to mid ascending aorta, mid ascending to distal ascending (at the innominate artery)

- Below STJ - STJ is the sinotubular junction and identifies the boundary between the aortic root and the ascending aorta. The aortic root, aortic annulus, and the Sinus of Valsalva are below the STJ and are in Zone 0. (see figure).

- STJ – mid ascending - The segment of the ascending aorta between the sinotubular junction and the mid-point of the ascending aorta (i.e. proximal tubular ascending aorta) and is in Zone 0 (see figure).

- Mid ascending - distal ascending - The segment of the ascending aorta between the mid-point of the ascending aorta and the origin of the innominate artery or first branch vessel off the aortic arch and is in Zone 0 (see figure).

- Zone 1 of the aorta includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure).

- Zone 2 of the aorta includes the segment of aorta between the left carotid artery and left subclavian artery as well as the segment of aorta from which the left subclavian artery arises (see figure).

- Zone 3 of the aorta is the 2 cm segment of aorta just beyond the left subclavian artery (see figure).

- Zone 4 of the aorta extends from 2 cm beyond the left subclavian artery to the mid descending thoracic aorta, which is usually defined by the T6-T7 vertebral bodies (see figure).

- Zone 5 of the aorta extends from the mid descending thoracic aorta (at T6-T7) to the origin of the celiac artery but does not include the origin of the celiac artery (see figure).

- Zone 6 of the aorta extends from the celiac artery to the origin of the superior mesenteric artery but does not include the origin of the superior mesenteric artery (see figure).

- Zone 7 of the aorta extends from the superior mesenteric artery to the origin of the first renal artery but does not include the origin of the first renal artery (see figure).

- Zone 8 of the aorta is the segment of aorta from which all the renal arteries arise (usually two but may be more) (see figure).

- Zone 9 of the aorta is the segment of aorta between the last renal artery take-off and the aortic bifurcation (see figure).

- Zone 10 is the common iliac arteries (see figure).

- Zone 11 is the external iliac arteries (see figure)

SEQ. #: 5805
Long Name: Aorta Device - Delivery Method #15
Short Name: ADevDelMeth15
Definition: Indicate the delivery method used to insert device #15 within the aorta.

Intent/Clarification: For each device, the method of implant should be specified as either “open” or “endovascular.” If a device was attempted to be implanted endovascularly but was eventually implanted by open techniques, then this is designated “open.”

SEQ. #: 5810
Long Name: Aorta Device - Outcome #15
Short Name: ADevOut15
Definition: Indicate the outcome of the attempt to insert device #15.

Intent/Clarification:

- Unsuccessfully implanted/mal-deployed - This indicates that a device implantation was attempted by endovascular means but was not successfully deployed in the intended position. An example would be attempted deployment of a fenestrated or branched device for transverse arch intervention and mal alignment of the portal did not allow successful branch vessel bypass. If a device was mal-deployed but later removed this would be classified as “DelivMeth/deploy/remove.”

- Implanted/deployed and removed - This indicates that a device was attempted to be implanted by endovascular means but was not successfully deployed. An example would be open repair of descending thoracic aortic repair after failed thoracic endovascular aortic repair from rupture or persistent endoleak. This would be classified as TEVAR as “DelivMeth/deploy/remove.”

- Successfully implanted/deployed - This indicates that the device was successfully deployed by endovascular or open means.

SEQ. #: 5815
Long Name: Aorta Device - Model Number #15
Short Name: ADevModel15
Definition: Indicate the model number of aorta device #15.

Intent/Clarification: This is the model number from the manufacturer related to the type of device implanted. There is no drop-down list of model numbers for aorta devices.

SEQ. #: 5820
Long Name: Aorta Device - Unique Device Identifier #15
Short Name: ADevUDI15

Definition: Indicate the Unique Device Identifier (UDI) of aorta device #15 if available, otherwise leave blank. Note that the UDI is not the same as the serial number.

Intent/Clarification: This is a unique identifier that will be on each device. It may not be available immediately. If not available leave blank. Please refer to the FDA web site for detailed explanation of UDI.

Note: STS does not want data managers to manually enter Device UDI numbers into the database. If your facility scans the UDI into the HIM record and your vendor allows automatic entry into their software, please use this method for entry. If the UDI is scanned into the chart and you can copy and paste this into our vendor software, please use this method. Update August 2020 -If you can't use either of these methods please leave blank.

https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/UniqueDeviceIdentification/default.htm?utm_s%20our%20ce=Members%E2%80%90Only+Updates&utm_campaign=c7c1e8c870%E2%80%90%20Proposed_Rules_7_5_2012&utm_medium=email

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Congenital Defect Repair (other than ASD – Secundum, PFO, or Unicuspid, Bicuspid or Quadricuspid valve)

SEQ. #: 6500
Long Name: Other Card-Congenital Diagnosis 1
Short Name: OCarCongDiag1
Definition: Indicate the first of the three most significant congenital diagnoses.

Intent/Clarification: Diagnosis Other than ASD – Secundum, PFO, or Unicuspid, Bicuspid or Quadricuspid valve. A comprehensive list of diagnoses is available at ACSD Congenital Procedure List

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SEQ. #: 6505
Long Name: Other Card-Congenital Diagnosis 2
Short Name: OCarCongDiag2
Definition: Indicate the second of the three most significant congenital diagnoses.

Intent/Clarification: Diagnosis Other than ASD – Secundum, PFO, or Unicuspid, Bicuspid or Quadricuspid valve. A comprehensive list of diagnoses is available at ACSD Congenital Procedure List

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SEQ. #: 6510
Long Name: Other Card-Congenital Diagnosis 3
Short Name: OCarCongDiag3
Definition: Indicate the third of the three most significant congenital diagnoses.

Intent/Clarification: Diagnosis Other than ASD – Secundum, PFO, or Unicuspid, Bicuspid or Quadricuspid valve. A comprehensive list of diagnoses is available at ACSD Congenital Procedure List

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SEQ. #: 6515
Long Name: Other Card-Congenital Procedure 1
Short Name: OCarCongProc1
Definition: Indicate the first of the three most significant congenital procedures.

Intent/Clarification: A comprehensive list of diagnoses is available at ACSD Congenital Procedure List
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SEQ. #: 6520
Long Name: Other Card-Congenital Procedure 2
Short Name: OCarCongProc2
Definition: Indicate the second of the three most significant congenital procedures.

Intent/Clarification: A comprehensive list of diagnoses is available at ACSD Congenital Procedure List
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SEQ. #: 6525
Long Name: Other Card-Congenital Procedure 3
Short Name: OCarCongProc3
Definition: Indicate the third of the three most significant congenital procedures.

Intent/Clarification: A comprehensive list of diagnoses is available at ACSD Congenital Procedure List
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Other Non-Cardiac Procedures

General information:
When considering skin incision start date and time in sequence number 2265, the first skin incision would apply to the incision made for a Carotid, Vascular, Thoracic and Other non-cardiac procedure.

SEQ. #: 6530
Long Name: Other Non Card-Caro Endart
Short Name: ONCCarEn
Definition: Indicate whether the patient underwent surgical removal of stenotic atheromatous plaque or percutaneous/surgical placement of carotid stent in conjunction with the primary surgical procedure.

Intent/Clarification: Indicate whether the patient underwent a Carotid Endarectomy or percutaneous/surgical placement of carotid stent in conjunction with the primary surgical procedure. Right and/or left carotid arteries are branches of the arch of the aorta that traverse the neck and supply blood flow to the brain.

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

SEQ. #: 6535
Long Name: Other Non Card-Other Vasc
Short Name: ONCOVasc
Definition: Indicate whether patient had a procedure treat vascular disease in conjunction with the primary surgical procedure.

Intent/Clarification: May include bypass of superior vena cava, renal artery bypass, or lower extremity bypass.

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

Do not code the radial graft harvest mobilization and/or re-anastomosis as a non-cardiac vascular procedure. This is part of the CAB procedure. Do not code as a surgical complication; however, code any postoperative complications affiliated with the radial artery harvest.

Do not code endostent to the vena cava as a non-cardiac vascular procedure. Endostent to the vena cava are not included in the database.

SEQ. #: 6540
Long Name: Other Non Card-Other Thor
Short Name: ONCOThor
Definition: Indicate whether patient underwent a procedure involving Thorax/Pleura in conjunction with the primary surgical procedure.

Intent/Clarification: This includes, but is not limited to, lung resection, total lung decortication mediastinal mass and/or lung dissection. Only capture procedures that increase the risk of morbidity or mortality when done in conjunction with the index procedure. The intent is to capture procedures considered “major” in the Thoracic Database, review the data collection form:

http://www.sts.org/sites/default/files/documents/STSThoracicDCF_V2_3_MajorProc_Annotated.pdf

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

Do not code minor thoracic procedures, such as a lung biopsy**,** needle biopsy, wedge biopsy, wedge resection, removal of the thymus, plication of a redundant left hemi-diaphragm or pleural effusion drainage or evacuation.

SEQ. #: 6545

Long Name: Other Non Card-Other
Short Name: ONCOther
Definition: Indicate whether the patient had any other non-cardiac procedure performed in conjunction with the primary surgical procedure that is not included within this section.

Intent/Clarification: The goal is to keep as many procedures as possible in the "isolated" category. Only code "yes" for procedures that high likelihood of negatively impacting a patient's outcome (survival, quality of life, ability to recover) and/or prolong the patient's length of stay.

- Yes, planned
- Yes, unplanned due to surgical complication
- Yes, unplanned due to unsuspected disease or anatomy
- No

Examples of procedures that are not coded as other non-cardiac procedures:

- EGD with dilatation of his esophagus for stricture in order to pass the TEE probe
- Open reduction internally fixation of the sternum with sternal plating
- VP shunt was externalized or simply "moved aside"
- Repair of severe pectus excavatum
- Planned pectoral muscle flap closure for index surgery
- Cystoscopy, dilatation, and placement of a foley prior to incision
- Needle Biopsy
- Reconstruction of flail chest and sternal fracture

Postoperative

General Information

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database. Please gather as much of the post-op information as possible such as; ICU hours, blood use, complications, etc. from the acute care facility that the patient was transferred to, as the patient is not technically discharged until they are discharged from acute care.

SEQ. #. 6546
Long Name: Patient Expired in OR
Short Name: ExpiredInOR
Definition - Indicate whether the patient died prior to leaving the operating room during the initial surgery.

Intent/Clarification: If the patient expires in the OR, Section O and Section P will gray out and not open in the database.

- Yes
- No

General Information for Labs:

Do not round lab values.

Include POC (point of care) results.

Update July 2020 – For lab values that are documented as < or > an value, code as the next decimal point below or above the value. For example, if the total bilirubin closest to entry into the OR is documented as "<0.2". Code as 0.19.

SEQ. #. 6550
Long Name: Peak Postoperative Creatinine Level within 48 hours of OR exit
Short Name: PeakPostCreat48Hrs
Definition - Indicate the patient's peak creatinine level from OR exit to 48 hours post OR Exit.

Intent/Clarification: Code the highest creatinine level from OR exit to within 48 hours post OR exit. The unit of measurement for Creatinine is mg/dl or mg/100ml or mg%.

SEQ. #: 6555
Long Name: Peak Postoperative Creatinine Level prior to discharge
Short Name: PostCreat
Definition: Indicate the postoperative creatinine level. If more than one level is obtained, code the highest level from OR exit to Discharge. (This can be the same value as Peak Postoperative creatinine within 48 hours of OR Exit.)

Intent/Clarification: Code the highest creatinine level from OR exit to discharge. The unit of measurement for creatinine is mg/dl or mg/100ml or mg%.

SEQ. #: 6556
Long Name: Discharge Hemoglobin
Short Name: PostopHemoglobin

Definition: Indicate the postoperative hemoglobin closest to discharge

Intent/Clarification: Code the hemoglobin (Hgb) value closest to the time of discharge. The unit of measurement for Hgb is g/dl or g/100 ml or g%.

SEQ. #: 6557
Long Name: Discharge Hematocrit
Short Name: PostopHct
Definition: Indicate the postoperative hematocrit closest to discharge

Intent/Clarification: Code the hematocrit (Hct) value closest to the time of discharge. The unit of measurement for Hct is %.

SEQ. #: 6560
Long Name: Blood Prod
Short Name: BldProd
Definition: Indicate whether blood products were transfused any time postoperatively. Postoperatively is defined as any blood started after OR exit time of initial surgical procedure. Include blood transfused after the initial surgery, and any blood transfused during a re-operative surgery.

Intent/Clarification: The intent is to track postoperative blood utilization. Blood products refer to RBC (includes whole blood), FFP, cryoprecipitate, and platelets.

Do NOT include:

- Pre-donated autologous blood
- Cell saver blood
- Pump residual blood
- Chest tube re-circulated blood

SEQ. #: 6565
Long Name: Blood Prod - RBC Units
Short Name: BdRBCU
Definition: Indicate the number of units of packed red blood cells that were transfused any time postoperatively. Do not include autologous, cell-saver or chest tube recirculated blood.

Intent/Clarification: Postoperatively is defined as any blood started after OR exit time of initial surgical procedure. Include blood transfused after the initial surgery, and any blood transfused during a re-operative surgery.

SEQ. #: 6570

Long Name: Blood Prod - Fresh Frozen Plasma/Plasma Units

Short Name: BdFFPU

Definition: Indicate the number of units of fresh frozen plasma that were transfused any time postoperatively.

Intent/Clarification: Postoperatively is defined as any blood started after OR exit time of initial surgical procedure. Include blood transfused after the initial surgery, and any blood transfused during a re-operative surgery.

SEQ. #: 6575
Long Name: Blood Prod - Cryo Units
Short Name: BdCryoU
Definition: Indicate the number of units of cryoprecipitate that were transfused postoperatively. One bag of cryo = one unit. The number of units is not volume dependent.
Intent/Clarification: Postoperatively is defined as any blood started after OR exit time of initial surgical procedure. Include blood transfused after the initial surgery, and any blood transfused during a re-operative surgery.

SEQ. #: 6581
Long Name: Blood Prod - Platelet Dose Pack
Short Name: BdPlatDosePk
Definition - Indicate the total number of platelet dose packs administered from OR exit to acute care discharge. A dose pack is not the same as a unit. Please see intent/clarification for further direction.

Intent/Clarification: Postoperatively is defined as any blood started after OR exit time of initial surgical procedure. Include blood transfused after the initial surgery, and any blood transfused during a re-operative surgery.

A dose pack may consist of 4, 6, 8, 10, or any number of donor platelet units each from a separate donor which is pooled into a dose pack (single bag) for transfusion. A dose pack (single bag) is counted as 1 despite the number of platelet units in a dose pack. For example, nurse documents giving a 10 pack of platelets, code as 1 dose pack.

Platelets can be aggregated from several donors or be designated as single donor platelets. It is imperative that each site understand their institution’s definition for Random Donor Platelets (RDP) and Single Donor Platelets (SDP).

SEQ. #: 6585
Long Name: Extubated In OR

Short Name: ExtubOR
Definition: Indicate whether the patient was extubated prior to leaving the operating room during the initial surgery.

Intent/Clarification:

- Yes - The patient is extubated in the OR during the initial surgery.
- No – The patient is extubated after leaving the operating room after the initial surgery.
- NA – The patient was not intubated for the initial surgery.

Patients that are extubated in the OR are included in the <6 intubation metric and their vent times will calculate to zero hours.

SEQ. #: 6586
Long Name: Initial Extubation Date And Time
Short Name: ExtubateDT
Definition: Indicate the date (mm/dd/yyyy) and time (hh:mm) (24 hour clock) ventilatory support initially ceased after surgery.

Intent/Clarification: Extubation time documented by the Respiratory Therapist is the priority source for this field. The following guidelines apply:

- Capture the extubation time closest to the initial OR exit time.
- If a patient returns to OR after the initial surgery and the patient was not extubated prior to returning to the OR, you must include the hours during re-operation since the patient was not extubated before return to OR.
- If patient self-extubates and requires emergent reintubation (within 15 min), do not code the extubation and reintubation. If, however, the patient remains extubated > 15 min, code the extubation time and the reintubation is captured.
- If the patient has a tracheostomy and is separated from the mechanical ventilator postoperatively within the hospital admission, capture the date and time of separation from the mechanical ventilator closest to the initial OR exit time. Use the date and time when the patient no longer requires any ventilator support.
- If the patient expires while intubated (endotracheal or trach) and is on the ventilator, capture the date and time of death as initial extubation time.
- If patient is discharged on chronic ventilator support, capture the date and time of discharge.
- **Update July 2020 Leave field blank if patient was not intubated.**

SEQ. #: 6587
Long Name: Total Initial Postoperative Vent Hours
Short Name: TotalPOInitVentHr
Definition: System calculated. OR Exit date/time to initial extubation date/time.

Intent/Clarification:

SEQ. #: 6591
Long Name: Postop Intubation/Reintubation During Hospital Stay
Short Name: PostopIntub
Definition: Indicate whether the patient was intubated for the first time after leaving the OR from the initial procedure, or re-intubated during the hospital stay after the initial extubation.

Intent/Clarification:

- Do not include reintubation for surgical or other procedures when the patient is extubated prior to leaving the operating / procedure room.
- If patient self-extubates and requires emergent reintubation (within 15 min), do not code the extubation and reintubation. If, however, the patient remains extubated > 15 min, code the extubation time and the reintubation is captured.

SEQ. #: 6595
Long Name: Additional Hours Ventilated
Short Name: VentHrsA
Definition: Indicate how many additional hours the patient was on ventilator after initial extubation.

Intent/Clarification: If the patient was reintubated during the current hospital stay, this value is used in the calculation to determine prolonged ventilation. Extubation time documented by the Respiratory Therapist is the priority source for this field. The following guidelines apply:

- If the patient returns to the operating room or procedure room and requires reintubation for the procedure and is not extubated before leaving the operating room or procedure room, count the additional hours ventilated from the OR / procedure room exit date and time to extubation date and time.
- Do not include the additional hours ventilated if the patient returns to the operating room or procedure room and requires reintubation for the procedure and is extubated before leaving the operating room or procedure room.

- If a patient has a trach performed due to extended post-op vent hours and the patient changes multiple times between CPAP mode / trach collar/ and back to ventilator at night, use the final liberation time from the ventilator (the date and time when the patient no longer requires any ventilator support) in this scenario. For example, patient on and off trach collar and ventilator for 5 days – the final liberation time is when the patient no longer requires the use of the mechanical ventilator – capture all hours during this process.

- **Update September 2020 – Do not round additional ventilator hours up. For example, if the ventilator hours are 50.626, enter 50.62.**

Ventilator hours are calculated with a decimal point so that minutes can be included. Divide the number of minutes by 60.

Examples:
0.1 = 6 minutes
0.3 = 15 minutes
0.5 = 30 minutes
0.8 = 45 minutes etc.

SEQ. #: 6600
Long Name: Total Postoperative Ventilation Hours
Short Name: VentHrsTot
Definition: Calculated variable measuring OR exit time to extubation time plus any additional hours due to reintubation.

Intent/Clarification: This will be system calculated by the software by adding initial post-op vent hours plus additional postop vent hours to determine total post op vent time. Anything greater than 24 hours is considered prolonged postop vent time. Total hours ventilated is rounded in the calculation.

SEQ. #: 6605
Long Name: ICU Visit
Short Name: ICUVisit
Definition: Indicate whether the patient received ICU level of care immediately following the initial surgery. Include ICU unit, post-anesthesia recovery, and other similar critical care environments.

Intent/Clarification: Indicate whether the patient received ICU level of care immediately following the initial surgery, include ICU units and other similar critical care environments. Do not include PACU if only used for Phase I recovery in patients who are sent to non-ICU beds after Phase 1 recovery. Do include PACU if used as a critical care unit when an ICU bed was not available.

SEQ. #: 6610
Long Name: Initial ICU hours
Short Name: ICUInHrs
Definition: Indicate the number of hours the patient received ICU level of care from OR exit time following the initial surgery until the time of actual transfer out of ICU, include ICU unit, post-anesthesia recovery, and other similar critical care environments. For those sites providing postop ICU level of care in one single stay unit (admission to ICU to hospital discharge), document the number of hours immediately following the initial surgery until a physician order is written to change the level of care provided.

Intent/Clarification: The following guidelines apply:

- ICU hours begin from OR exit Date and Time and ends when the patient physically leaves the ICU. **The only way to objectively count ICU time is to count the actual time the patient physically leaves the ICU.**
- For those sites with single stay units (admission to ICU to hospital discharge), document the number of hours immediately following the initial surgery until the date and time that they patient's level of care changes in the ADT system. If there a question in the ADT system as to the date and time, confirm with a physician order
- If the patient expires while in the ICU, use the date/time on the death certificate (time pronounced dead).
- **Update September 2020 – Do not round ICU hours up. For example, if the ICU hours are 26.347, enter 26.34.**

ICU hours are calculated with a decimal point so that minutes can be included. Divide the number of minutes by 60.

Examples:
0.1 = 6 minutes
0.3 = 15 minutes
0.5 = 30 minutes
0.8 = 45 minutes etc.

Note: Patient returns to the OR multiple times during his initial ICU stay. Do not deduct the time the patient is in the OR from the ICU hours. The intent of the field is to capture the time from OR exit date and time to the initial transfer out of the ICU. In this scenario, the patient still requires ICU care.

SEQ. #: 6615
Long Name: Readmission to ICU
Short Name: ICUReadm
Definition: Indicate whether the patient spent time in an ICU after having been transferred to a step-down unit (lower level care). Specific situations are described below:

- OR → ICU → OR → ICU = No
- OR → ICU → STEP DOWN → ICU = Yes
- OR → STEP DOWN → ICU = Yes

Single care unit:
Code ICU readmission when the level of care increases and is noted in the physician order.

Intent/Clarification: The intent is to capture episodes of patient deterioration necessitating a higher level of care. For single stay units, this is indicated by the date and time that the patient's level of care changes in the ADT system. If there a question in the ADT system as to the date and time, confirm with a physician order

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SEQ. #: 6620
Long Name: Additional ICU Hours
Short Name: ICUAdHrs
Definition: Indicate the number of additional hours spent in the ICU, or at the equivalent higher level of care in single stay units.

Intent/Clarification: This will be used, along with initial ICU hours, to determine total post op ICU hours, an indication of resource utilization.

For single stay units, time should be calculated by the date and time that the patient's level of care changes in the ADT system to elevate the patient's level of care to Intensive Care until the level of care is de-escalated. If the patient expires, time should be counted from ADT system time and date to elevate the level of care to the time of death as noted in the medical record. If there a question in the ADT system as to the date and time, confirm with a physician order.

SEQ. #: 6625
Long Name: Postop Echo
Short Name: POpTTEch
Definition: Indicate whether an echo was performed postoperatively to evaluate valvular function prior to discharge.

Intent/Clarification: Indicate whether an echo was performed postoperatively prior to discharge. Capture echocardiograms performed after the patient leaves the operating room after the index procedure but prior to hospital discharge. Code the exam closest to discharge.

General Concepts Valve Disease and Regurgitation

If valve regurgitation is dictated from echocardiogram as "NO SIGNIFICANT REGURGITATION", code none.

If the Echo indicates that the native valve has physiological insufficiency, code as No insufficiency.

For Echo's that provide insufficiency in terms of +1, +2, +3, and +4, you cannot assume that +1 equals trace etc... Please work with your Echo dept. to develop a protocol that clearly defines what the scoring system equals in terms of descriptive terminology. Have this protocol available in the event of an audit.

In a situation where the only documentation that you have is that the valve is 'structurally normal' (there is no documentation of stenosis or insufficiency). Code this as No to regurgitation. This documentation implies that the valve is normal without disease or regurgitation.

If you do not have any documentation of valve insufficiency and no documentation of structurally normal valve as above, then code insufficiency as Not Documented.

If a patient has three postop Echo's, one performed on 9/12, one on 9/17 and the last on 9/18. Echo from 9/18(limited) states 'pulmonic valve was not well visualized'. Echo dated 9/17 (full) states ' PV not well visualized, and Echo from 9/12 states "there is mild pulmonic valve regurgitation", code as mild PV regurgitation since the one closest to discharge and prior to that did not visualize the PV.

Update August 2020 - If there are multiple values for the valve regurgitation within the same echo such as Under the Mitral Value is says moderate regurgitation and Under Impression is states mild regurgitation, use the value on the final impression / conclusion / summary from the reading physician.

SEQ. #: 6630
Long Name: Postop Echo Aortic Insufficiency
Short Name: POpTTAR
Definition: Indicate the highest level of aortic insufficiency/regurgitation found on post op echo closest to discharge.

Intent/Clarification: Capture echocardiograms performed after the patient leaves the operating room after the index procedure but prior to hospital discharge. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. If the report for an echocardiogram does not address valve regurgitation, code "not documented". Use the following to categorize the level of insufficiency/regurgitation:

- None
- Trace/trivial
- Mild
- Moderate
- Severe
- Not Documented

SEQ. #: 6631
Long Name: Postop Echo Aortic Paravalvular Leak
Short Name: POpAortParaLk
Definition: Indicate the highest level of aortic paravalvular leak found on post op Echo closest to discharge.

Intent/Clarification: To identify a paravalvular leak in a prosthetic aortic valve. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. Not applicable" should be coded if patient does not have a prosthetic valve.

TAVR valves can have paravalvular leak and should be coded as such.

SEQ. #: 6635
Long Name: Postop Echo Mitral Insufficiency

Short Name: POpTTMR
Definition: Indicate the highest level of mitral insufficiency/regurgitation found on post op Echo closest to discharge.

Intent/Clarification: Capture echocardiograms performed after the patient leaves the operating room after the index procedure but prior to hospital discharge. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. If the report for an echo does not address valve disease, code “not reported”. Use the following to categorize the level of insufficiency/regurgitation:

- None
- Trace/trivial
- Mild
- Moderate
- Severe
- Not Documented

SEQ. #: 6636
Long Name: Postop Echo Mitral Paravalvular leak
Short Name: POpMitParaLk
Definition: Indicate the highest level of mitral paravalvular leak found on post op Echo closest to discharge.

Intent/Clarification: To identify a paravalvular leak in a prosthetic mitral valve. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. Not applicable" should be coded if patient does not have a prosthetic valve.

Transcatheter Mitral Valve Replacement (TMVR) valves can have paravalvular leak and should be coded as such.

SEQ. #: 6640
Long Name: Postop Echo Tricuspid Insufficiency
Short Name: POpTTTR
Definition: Indicate the highest level of tricuspid insufficiency/ regurgitation found on post op Echo closest to discharge.

Intent/Clarification: Capture echocardiograms performed after the patient leaves the operating room after the index procedure but prior to hospital discharge. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. If the report for an echocardiogram does not address valve regurgitation, code “not documented”. Use the following to categorize the level of insufficiency/regurgitation:

- None
- Trace/trivial
- Mild
- Moderate
- Severe
- Not Documented

SEQ. #: 6645
Long Name: Postop Echo Pulmonic Insufficiency
Short Name: POpTTPu
Definition: Indicate the highest level of pulmonic insufficiency/ regurgitation found on post op Echo closest to discharge.

Intent/Clarification: Capture echocardiograms performed after the patient leaves the operating room after the index procedure but prior to hospital discharge. Mild-to-moderate should be coded as moderate; moderate to severe should be coded as severe. If the report for an echocardiogram does not address valve regurgitation, code "not documented". Use the following to categorize the level of insufficiency/regurgitation:

- None
- Trace/trivial
- Mild
- Moderate
- Severe
- Not Documented

General Concepts for Ejection Fraction (EF)

If a percentage range is reported, report a whole number using the "mean". For example, a range of 55-60 is coded as 58%.

If you have a 3D mode, it will take precedence over the 2D or M mode. If you have a 2D mode and M mode, the 2D mode will take precedence over the M mode.

If there are multiple values for the EF within the post-op echo such as Under the Left Ventricle the EF is 35% and Under Impression LVEF 35-40%, use the value on the final impression / conclusion / summary from the reading physician.

If multiple methods of measurement of EF occur within in the same final impression / conclusion / summary on the post-op Echo report, use the following: The priority source for EF is as follows:

- 3D calculated EFs
- Simpson's or biplane calculated EF
- 2D calculated EF
- Visual EF

https://www.asecho.org/wp-content/uploads/2015/01/ChamberQuantification2015.pdf

For Echo reports that have a descriptive term such as normal documented in the impression / conclusion / summary for EF and the measurement portion of the report says 60-70% by visual estimate, use the numerical values first and capture as 65%. Use descriptive terms when you have no numerical values.

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%

- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

SEQ. #: 6650
Long Name: Postop EF Done
Short Name: POpEFD
Definition: Indicate whether the Ejection Fraction was measured postoperatively.

Intent/Clarification:

- Yes
- No

SEQ. #: 6655
Long Name: Postop EF
Short Name: POpEF
Definition: Indicate the Ejection Fraction (percentage of the blood emptied from the left ventricle at the end of the contraction) measured post-operatively closest to discharge.

Intent/Clarification: Record the mean ejection fraction (EF) closest to discharge. If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

Note: If no diagnostic report is in the medical record, a value documented in the medical record is acceptable.

Please note a reported value, for example, a <u>range</u> of 55-60 is coded as 58%.

Postoperative Events

General Information:

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database. Please gather as much of the post-op information as possible such as; ICU hours, blood use, complications, etc. from the acute care facility that the patient was transferred to, as the patient is not technically discharged until they are discharged from acute care.

30 Day Mortality / 30 Day Readmission / 30 Day DSWI Infection Log – Data Managers need to keep some type of log to include verification source, date assessed, and status of mortality, readmit, and DSWI. For example, this can be done on an excel spreadsheet or a document attached to DCF such as John Doe - Surgery 1/1/20 - Discharge 1/5/20 - checked with MD office and checked Medical Record on 2/6/20 and alive with no infection or readmit.

SEQ. #: 6690
Long Name: Post-Op-Surgical Site Infection
Short Name: SurSInf
Definition: Indicate whether a surgical site infection (SSI) was diagnosed within 30 days of the procedure or any time during the initial hospitalization for surgery. Refer to the most current CDC definition for SSI which can be found in the training manual.

Intent/Clarification: Surgical Site Complications during postoperative period up to 30 days or during initial hospitalization.

- Yes, Infectious
- Yes, Non-Infectious
- Yes, both
- No

Table 1. Surgical Site Infection Criteria

Criterion	Surgical Site Infection (SSI)
	Superficial incisional SSI Must meet the following criteria:
	Date of event occurs within 30 days after any NHSN operative procedure (where day 1 = the procedure date) **AND** involves only skin and subcutaneous tissue of the incision **AND** patient has at least ***one*** of the following: a. purulent drainage from the superficial incision. b. organism(s) identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing (ASC/AST)). c. superficial incision that is deliberately opened by a surgeon, physician* or physician designee and culture or non-culture based testing of the superficial incision or subcutaneous tissue is not performed **AND** patient has at least one of the following signs or symptoms: localized pain or tenderness; localized swelling; erythema; or heat. d. diagnosis of a superficial incisional SSI by a physician* or physician designee.

	Superficial Incisional SSI
Comments	There are two specific types of superficial incisional SSIs: 1. Superficial Incisional Primary (SIP) – a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (for example, C-section incision or chest incision for CBGB) 2. Superficial Incisional Secondary (SIS) – a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (for example, donor site incision for CBGB)
Reporting Instructions for Superficial SSI	**The following do not qualify as criteria for meeting the NHSN definition of superficial incisional SSI:** • Diagnosis/treatment of cellulitis (redness/warmth/swelling), by itself, does not meet criterion "d" for superficial incisional SSI. Conversely, an incision that is draining or that has organisms identified by culture or non-culture based testing is not considered a cellulitis. • A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration). • For an NHSN operative procedure, a laparoscopic trocar site is considered a surgical incision and not a stab wound. • A localized stab wound or pin site infection is not considered an SSI; depending on the depth, these infections might be considered either a skin (SKIN) or soft tissue (ST) infection.

https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf

Deep incisional SSI: Must meet the following criteria:

Infection occurs within 30 days after the operative procedure (where day 1 = the procedure date)

AND

Involves deep soft tissues of the incision (e.g. fascia and muscle layers)

AND

Patient has at least ***one*** of the following:

a. Purulent drainage from the deep incision.
b. A deep incision that spontaneously dehisces or is deliberately opened by a surgeon, attending physician or

other designee **and** is culture positive or not cultured. A culture from the deep soft tissues of the incision that has a negative finding does not meet this criterion.

AND

Patient has at least ***one*** of the following signs or symptoms:

- Fever (>38°C)
- Localized pain or tenderness
- An abscess or other evidence of infection involving the deep incision that is detected on direct examination, during invasive procedure, or by histopathologic examination or imaging test.

.

- There are two specific types of deep incisional SSIs:
  - Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g. chest incision for CABG)
  - Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g. donor site incision for CABG)

Organ/Space SSI: Must meet the following criteria:

Infection occurs within 30 days after the operative procedure (where day 1 = the procedure date)

AND

Infection involves any part of the body deeper than the fascia / muscle layers (excludes the skin incision) that is opened or manipulated during the operative procedure

AND

Patient has at least one of the following:

a. Purulent drainage from a drain that is placed into the organ/space.
b. Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.
c. An abscess or other evidence of infection involving the organ/space that is detected on direct examination, during invasive procedure, or by histopathologic examination or imaging test, **AND** meets at least one criterion for a specific organ/space infection of mediastinitis below:

- **MED-Mediastinitis:** Must meet the following criteria
  - Mediastinitis must meet at least 1 of the following criteria:
    - Patient has organisms cultured from mediastinal tissue or fluid obtained during an invasive procedure.

- Patient has evidence of mediastinitis seen during an invasive procedure or histopathologic examination.
- Patient has **at least 1** of the following signs or symptoms:
  - Fever (>38°C)
  - Chest pain*
  - Sternal instability*
    AND at least 1 of the following:
    - Purulent discharge from mediastinal area
    - Mediastinal widening on imaging test

* With no other recognized cause

Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE

SEQ. #: 6695
Long Name: Post-Op-Sternal-Superficial Wound Infection
Short Name: CSternalSupInf
Definition: Indicate whether a superficial sternal wound infection was diagnosed within 30 days of the procedure or any time during the hospitalization for surgery.

Intent/Clarification: See above definition for superficial site infection.

- Yes, within 30 days of procedure
- Yes, >30 days after procedure but during hospitalization for surgery
- No

SEQ. #: 6700
Long Name: Post-Op-Deep Sternal
Short Name: DeepSternInf
Definition: Indicate whether a deep sternal wound infection or mediastinitis was diagnosed within 30 days of the OR date or at any time during the initial hospitalization.

Intent/Clarification: See above definition for Deep Sternal Infection/Organ Space / Mediastinitis. The STS Composite scores weighs deep sternal wound infection and mediastinitis the same.

- Yes, within 30 days of procedure
- Yes, >30 days after procedure but during initial hospitalization
- No

Update August 2020 - If SEQ 6700 Post-Op-Deep Sternal Wound is coded "yes", then SEQ 6749 Deep Sternal Wound Infection Within 90 Day is automatically coded "yes" as well. For sites who do not normally follow infection for 90 days:

- **If you code Yes to SEQ 6700 DSWI infection within 30 days, then also code SEQ 6749 as “Yes”.**
- **For all other patients that do not have DSWI infection within 30 days, code unknown for SEQ 6749.**

SEQ. #: 6705
Long Name: Post-Op-Deep Sternal – Diagnosis Date
Short Name: DeepSternInfDt
Definition: Indicate the first date that deep sternal wound infection or mediastinitis was documented.

Intent/Clarification: Required date format: mm/dd/yyyy

SEQ. #: 6711
Long Name: Post-Op-Infect-Thoracotomy (within 30 days or initial hospitalization)
Short Name: CIThor30
Definition: Indicate whether a surgical site infection involving a thoracotomy or parasternal site was diagnosed within 30 days of the procedure or any time during the hospitalization for surgery.

Intent/Clarification: Time frame is from OR exit time to 30 days post procedure or discharge from initial hospital visit if admitted for greater than 30 days.

SEQ. #: 6715
Long Name: Post-Op-Conduit Harvest (within 30 days or initial hospitalization)
Short Name: ConduitHarv
Definition: Indicate whether a surgical site infection involving a conduit harvest site was diagnosed within 30 days of the procedure or any time during the hospitalization for surgery.

Intent/Clarification: Capture infections at the site of an endovascular harvest site or an open harvest site, arm, or leg.

SEQ. #: 6720
Long Name: Post-Op-Cannulation Site (within 30 days or initial hospitalization)
Short Name: CanSite
Definition: Indicate whether a surgical site infection involving a cannulation site was diagnosed within 30 days of the procedure or any time during the hospitalization for surgery.

Intent/Clarification: Capture infections of cannulation sites for the index procedure aorta / venous sites cannulated during surgery for CPB and the transcatheter cannulation site for transcatheter procedures such as TAVR. These are considered secondary surgical site infections since they do not involve the primary surgical incision. Follow CDC criteria above.

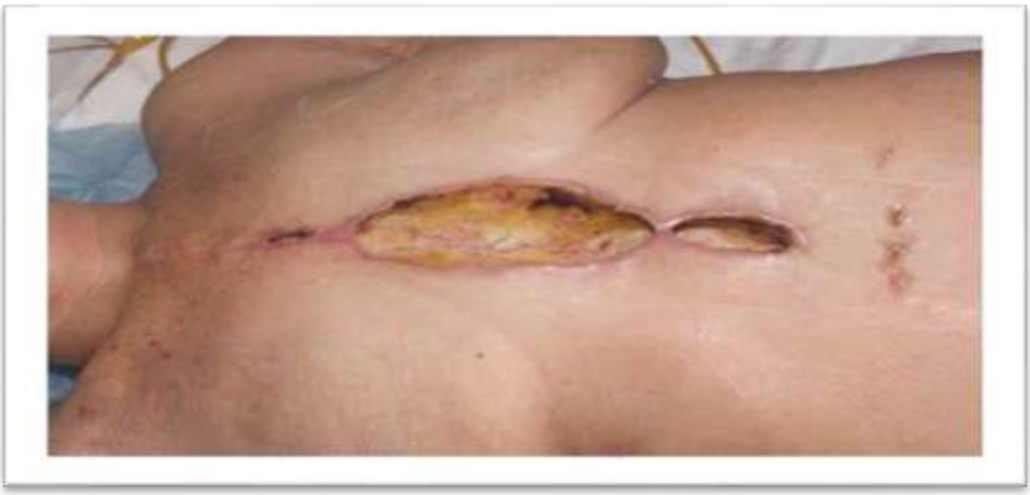
This does not include mechanical assist device (MAD) insertion (cannulation) sites.

SEQ. #: 6748
Long Name: Non-Infective Surgical Wound Dehiscence (includes non-infective sterile wound)
Short Name: NonInfSurgWndDeh
Definition: Indicate if the patient's non-infectious sternal wound dehiscence was deep or superficial.

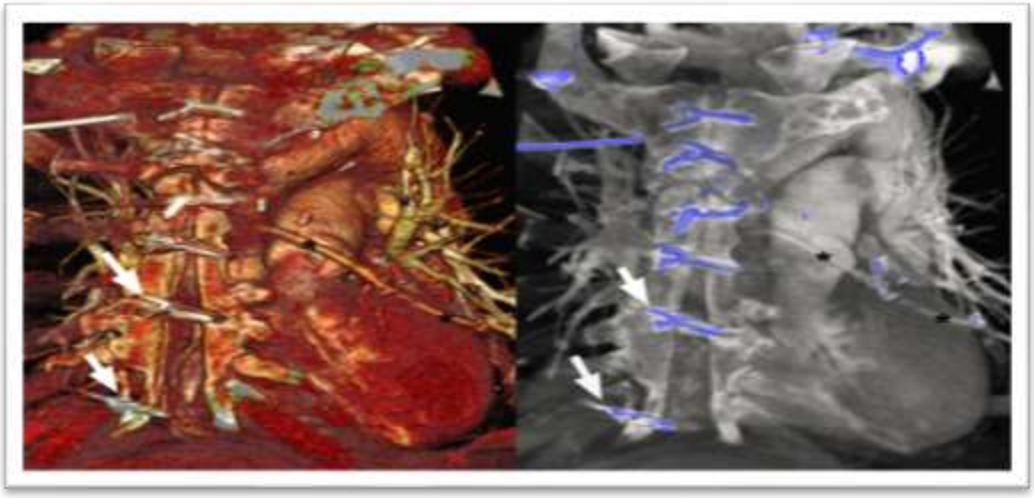
Intent/Clarification: Capture non-infectious sternal wound dehiscence. Wound dehiscence due to wound infection should be recorded as a wound infection.

Wound dehiscence (sterile) is defined as separation of the layers of a surgical wound. This separation can either be superficial or deep and can include the sternum in the case of a median sternotomy incision. Causes of wound dehiscence can include tissue ischemia, nutritional deficiencies, use of corticosteroids, vitamin C deficiency, and others.

- Sternal Superficial – Sternal superficial dehiscence is when the superficial or soft tissue layers of the incision separate, and the bony sternum remains intact. Superficial sternal wound dehiscence after midline may require prolonged medical treatment. It can be managed conventionally by topical treatment, with delayed secondary healing, or by **surgical** treatment and primary skin closure**.** See figure below:



Deep Sternal – Deep sternal instability (sterile) is when the superficial and soft tissue layers of the incision remain intact but non-union of the sternal edges is present **(**separation of the bony sternum). Sterile dehiscence of the sternal edges is without evidence of infection and requires surgical intervention. See figure below:



SEQ. #: 6749
Long Name: Deep Sternal Wound Infection Within 90 Day
Short Name: DeepSternalInf90
Definition: Indicate whether there was evidence that the patient had a deep sternal wound infection within 90 days of the procedure.

Intent/Clarification: Data Managers are not required to follow their patient for 90 days post-op. This field was added for sites who want to align with the CDC definition of the DSWI timeframe. Answer unknown for this field if you choose to not follow patients for 90 days post-op. There is no penalty for choosing unknown.

See above definition for Deep Sternal Infection/Organ Space / Mediastinitis.

- Yes
- No
- Unknown - Answer unknown for this field if you choose to not follow patients for 90 days post-op.

Update August 2020 - If SEQ 6700 Post-Op-Deep Sternal Wound is coded "yes", then SEQ 6749 Deep Sternal Wound Infection Within 90 Day is automatically coded "yes" as well. For sites who do not normally follow infection for 90 days:

- If you code Yes to SEQ 6700 DSWI infection within 30 days, then also code SEQ 6749 as “Yes”.
- For all other patients that do not have DSWI infection within 30 days, code unknown for SEQ 6749.

SEQ. #: 6750
Long Name: In Hospital Post-Op Events
Short Name: Complics
Definition: Indicate whether a postoperative event occurred during the hospitalization for surgery. This includes the entire postoperative period up to discharge, even if over 30 days.

Intent/Clarification: The intent is to document those events/complications that:

- Pose either a life-threatening situation or create a potential long-term deficit
- Require pharmacological, surgical, or medical intervention to prevent further clinical deterioration
- Increase length of stay and/or resource utilization.

If the patient expires in the operative room, the complications section does not need to be completed. There would not have been a post-operative period for the patient, therefore, no post-operative complications. Code the Complications data fields “No”.

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database. Please gather as much of the post-op information as possible such as; ICU hours, blood use, complications, etc. from the acute care facility that the patient was transferred to, as the patient is not technically discharged until they are discharged from acute care.

SEQ. #: 6755

Long Name: Post-Op-ReOp Bleeding/Tamponade

Short Name: COpReBld
Definition: Indicate whether the patient was re-explored for mediastinal bleeding with or without tamponade either in the ICU or returned to the operating room.

Intent/Clarification: The intent of this field is to capture patients who are re-explored for bleeding / suspected bleeding**.** Include patients that require surgical re-intervention to investigate or correct bleeding with or without tamponade.

Tamponade occurs when there is compression or restriction placed on the heart within the chest that creates hemodynamic instability or a hypo-perfusion state. Do not include medically (non-operatively) treated excessive post-operative bleeding/tamponade events.

Do not capture reopening of the chest or situations of excessive bleeding that occur prior to the patient leaving the operating room at the time of the primary procedure.

Include patients that return to an OR suite or equivalent OR environment (i.e., ICU setting) as identified by your institution, that require surgical re-intervention to investigate or correct bleeding with or without tamponade. Include only those interventions that pertain to the mediastinum or thoracic cavity.

Note: Pt returns to OR for exploration of bleed without tamponade. The surgeon documents hematoma evacuation with washout no active bleeding. This is a reop bleed. The patient was re-explored for mediastinal bleeding and a hematoma was evacuated.

SEQ. #: 6760

Long Name: Post-Op-ReOp Bleed Timing
Short Name: COpReBldTim
Definition: Indicate when reoperation for bleeding took place.

Intent/Clarification:

- Acute* - Within 24 hours of OR exit time of index or initial procedure
- Late - More than 24 hours after OR exit time of index or initial procedure

*Code exactly 24 hours as Acute

SEQ. #: 6765
Long Name: Post-Op-ReOp for Valvular Dysfunction
Short Name: COpReVlv
Definition: Indicate whether the patient returned to the operating room for prosthetic or native valve dysfunction. Dysfunction may be structural and/or non-structural failure. Dysfunction may be of prosthesis, a progressive native disease process, or an acute event process that disrupts valve function and creates either clinically compromising insufficiency/regurgitation or valve orifice narrowing.

Intent/Clarification: Include patients that return to an OR suite or an OR suite equivalent for prosthetic or native valve dysfunction.

- Yes, surgical
- Yes, transcatheter
- No

Note: Planned CABG for 1 day and a planned TAVR the next day - Code the TAVR in the Aortic Valve Section even though it was done on a different day. This patient will appropriately fall out of the isolated CAB category considering the additional risk of the TAVR procedure. In this scenario, use the OR times and from the open procedure.

SEQ. #: 6771

Long Name: Post-Op-Unplanned Coronary Artery Intervention
Short Name: CReintMI
Definition: Indicate if the patient had an unplanned coronary intervention (PCI) or unplanned surgical intervention on a coronary artery.

Intent/Clarification: Only capture surgical or Cath lab interventions that occur during the hospitalization prior to discharge. Capture an unplanned coronary intervention (PCI) or unplanned surgical intervention on a coronary artery in this field.

- Yes
- No

Percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy

catheter) into a native coronary artery or coronary artery bypass graft for the purpose of mechanical coronary revascularization. An **attempted**, even if unsuccessful, PCI should be coded as a PCI.

Note: Patient had CABG, coded in ICU postop and a few days postop had to go to cath lab and near total graft occlusion (RCA) found. The MD attempted to perrom a PCI of the RCA and was unable to wire/ cross the lesion. Code this as Post-Op-Unplanned Coronary Artery Intervention since a PCI was attempted. An LHC cath done without an attempted intervention would not be captured.

SEQ. #: 6772
Long Name: Post-Op-Unplanned Coronary Artery Intervention - Vessels
Short Name: CReintMIVes
Definition: Indicate the type of vessels that required postoperative re-intervention.

Intent/Clarification: Re-intervention may involve native coronary arteries, coronary artery bypass grafts or both.

- Native Coronary
- Graft
- Both

SEQ. #: 6773
Long Name: Post-Op-Unplanned Coronary Artery Intervention - Intervention Type
Short Name: CReintMIIntTy
Definition: Indicate the type of intervention used postoperatively.

Intent/Clarification:
Re-intervention may include surgery, PCI, or both.

SEQ. #: 6774
Long Name: Post-Op-Aortic Re-intervention
Short Name: CAortReint
Definition: Indicate whether the patient underwent an unplanned postoperative aortic intervention.

Intent/Clarification:
- Yes
- No

Note**:** The patient was initially scheduled for TEVAR but after a series of CT scans and manifestations of signs and symptoms, the surgeon opted to repair the ascending aortic flap first and then, 3 days later during the same episode of care, he took the patient back to the OR for the TEVAR. Do not capture this as post-operative aortic re-intervention. Code as a planned staged hybrid. Then capture the TEVAR accordingly in Seq. No. 5095. In this scenario, use the OR times and from the open procedure.

Note**:** Patient had an aortic aneurysm repair Elephant Trunk I. On the same admission, he went back to the OR after 7 days for planned Elephant trunk II procedure. Do not capture this as post-operative aortic re-intervention. Code as a planned staged hybrid Capture as one procedure, not a return to OR. Use the date and times for OR from the open procedure. If both procedures are endovascular, then use the times from the first procedure.

SEQ. #: 6775
Long Name: Post-Op-Aortic Re-intervention-Type
Short Name: CAortReintTy
Definition: Indicate the type of aortic intervention the patient received.

Intent/Clarification: Re-intervention may be open or endovascular.

- Open
- Endovascular

SEQ. #: 6778
Long Name: Post-Op-ReOp Other Cardiac Reasons
Short Name: COpReOth
Definition: Indicate whether the patient underwent an unplanned return to the operating room for other cardiac reasons.

Intent/Clarification: Include patients that return to an OR suite or an OR suite equivalent for any other cardiac reasons for reoperation.

- Yes
- No

Include patients that return to an OR suite or equivalent OR environment (i.e., ICU setting) as identified by your institution, that require surgical re-intervention to investigate/correct other non-bleed cardiac issues such as emergent open chest in the ICU for cardiac arrest.

Return to the OR for removal of Impella or IABP is not a reoperation for other cardiac. This is an expectation and not a complication.

Capture initiation of post-operative ECMO in Seq 3766, 3776, 3780 and in Seq 6778 a re-op for Other Cardiac Procedure for any ECMO regardless of where ECMO placement is performed.

SEQ. #: 6780
Long Name: Post-Op-Return To OR For Other Non-cardiac Reason
Short Name: COpReNon
Definition: Indicate whether the patient underwent an unplanned return to the operating room for other non-cardiac reasons.

Intent/Clarification: ***Events captured here are not included in the re-operative measure of the composite score.***

Non-cardiac events include, but are not limited to, events as described in Section N.

Code only those non-cardiac events that require a return to the surgical suite.

This includes procedures requiring a return to the operating room, such as general surgery procedures, vacular surgery procedures, hematoma evacuation of a non-cardiac / non-primary operative space such as abdominal hematoma or retroperitoneal hematoma etc...

This does not include tracheostomies – they will be captured in SEQ 6838.

This does not include procedures performed outside the operating room, such as GI lab for peg tubes, shunts for dialysis, etc. Due to practice pattern(s) determined by institutional culture or practice driven patterns, some sites may have included in this section cases and/or events that other sites may not. Capture those events that may pose a clinically or resource utilization impact on the patient AND necessitate a return to the OR.

For planned procedures, (i.e. a patient who is scheduled for lower extremity vascular surgery requiring a CAB prior to the scheduled vascular procedure), Code “No,” as this is not a complication, coding it as a complication misrepresents the outcome of the surgery.

Note: The patient completed CABG surgery and arrived in ICU. The OR nurse notified the surgeon about the missing instrument, a chest X-ray was performed and showed a retained foreign body in the chest. The patient was returned to the operating room for the removal of the foreign body. Code reoperation other non-cardiac.

SEQ. #: 6785
Long Name: Post-Op-Open Chest With Planned Delayed Sternal Closure
Short Name: COpPlndDelay
Definition: Indicate whether the chest was left open after the index surgical procedure with planned delayed sternal closure.

Intent/Clarification: This allows capture of patients who have the chest left open with a planned delayed sternal closure. The intent is to capture the delayed sternal closure of the chest following the index surgical procedure**.**

Note: If the patient’s chest was left open and the patient dies before it could be closed, code as delayed sternal closure.

SEQ. #: 6800
Long Name: Post-Op-Sepsis
Short Name: CSepsis
Definition: Indicate if the patient developed sepsis.

Intent/Clarification: Indicate whether post-operative sepsis was diagnosed by a provider during initial hospitalization.

Septicemia means invasion of the blood stream by microorganisms accompanied by chills, fever, and prostration. Sepsis is defined as evidence of serious infection accompanied by a deleterious systemic response. In the time period of the first 48 postoperative or post procedural hours, the diagnosis of sepsis requires the presence of a Systemic Inflammatory Response Syndrome (SIRS) resulting from a proven infection (such as bacteremia, fungemia or urinary tract infection). In the time period after the first 48 postoperative or post procedural hours, sepsis may be diagnosed by the presence of a SIRS resulting from suspected or proven infection. During the first 48 hours, a SIRS may result from the stress associated with surgery and/or cardiopulmonary bypass, thus the clinical criteria for sepsis during this time period should be more stringent.

Sepsis is defined as having 2 or more of the SIRS (systemic inflammatory response syndrome) criteria and a known or suspected infection, typically occurring within 6 hours of each other. SIRS may occur unrelated to infection, as in the case of cardiac surgery, and not indicative of Sepsis.

- Within the first 48 hours of cardiac surgery a patient MUST meet 2 SIRS criteria typically within 6 hours of each other and have a PROVEN infection (not suspected). Clinical criteria of sepsis must be more stringent during the first 48 hours following surgery because the stress surgery produces results in SIRS criteria and is not typically related to an infection.
- After 48 hours, the patient must have 2 or more SIRS criteria typically within 6 hours of each other and a known or suspected infection.

SIRS criteria included:

- HR > 90 (acute and not a chronic condition)
- Temp >38.5 or <36.0
- Resp >20 bpm or $PaCO^2$ <32 mmHg
- WBC <4000 or >12000 or >10% Bands

SEQ. #: 6810
Long Name: Post-Op-Neuro-Stroke Perm
Short Name: CNStrokP
Definition: Indicate whether the patient has a postoperative stroke (i.e., any confirmed neurological deficit of abrupt onset caused by a disturbance in blood supply to the brain) that was confirmed on imaging or did not resolve within 24 hours.

Intent/Clarification: The intent is to capture whether the patient has a postoperative stroke (i.e. any confirmed neurological deficit of abrupt onset caused by a disturbance in blood supply to the brain) that was **confirmed on imaging or did not resolve within 24 hours.**

Stroke occurs when the blood supply to part of the brain is suddenly interrupted or when a blood vessel in the brain bursts, spilling blood into the spaces surrounding brain cells. Brain cells die when they no longer receive oxygen and nutrients from the blood or there is sudden bleeding into or around the brain.

The symptoms of a stroke include:

- Sudden numbness or weakness, especially on one side of the body
- Sudden confusion or trouble speaking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble with walking, dizziness, or loss of balance or coordination
- Sudden severe headache with no known cause

There are two forms of stroke:

- Ischemic - Blockage of a blood vessel supplying the brain. Includes embolic.
- Hemorrhagic - Bleeding into or around the brain

Central events are caused by embolic or hemorrhagic events. Neurological deficits such as confusion, delirium and/or encephalopathic (anoxic or metabolic) events are not to be coded in this field.

Note: Patient had an MRI that was positive for a post-op stroke. In discussion with the cardiac team it was felt that this would not be captured as a post-op stroke because the symptoms resolved within 24 hours. In this scenario, code YES to post-op CVA. The intent is to capture whether the patient has a postoperative stroke (i.e. any confirmed neurological deficit of abrupt onset caused by a disturbance in blood supply to the brain) that was confirmed on imaging **or** did not resolve within 24 hours.

Reference: https://www.ninds.nih.gov/Disorders/All-Disorders/Stroke-Information-Page

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SEQ. #: 6821

Long Name: Post-Op-Neuro-Encephalopathy
Short Name: CNEnceph
Definition: Indicate if the patient was diagnosed with encephalopathy.

Intent/Clarification:
Indicate whether post-operative encephalopathy was diagnosed by a Neurologist during initial hospitalization. Do not code post-operative delirium as encephalopathy.

Encephalopathy is a term for any diffuse disease of the brain that alters brain function or structure. The hallmark of encephalopathy is an altered mental state. Blood tests, spinal fluid examination, imaging studies, electroencephalograms, and similar diagnostic studies may be used to differentiate the various causes of encephalopathy.

Encephalopathy may be caused by:

- Infectious agent (bacteria, virus, or prion),
- Metabolic or mitochondrial dysfunction,
- Brain tumor or increased pressure in the skull,
- Prolonged exposure to toxic elements (including solvents, drugs, radiation, paints, industrial chemicals, and certain metals),
- Chronic progressive trauma,

- Poor nutrition,
- Lack of oxygen or blood flow to the brain

Depending on the type and severity of encephalopathy, common neurological symptoms are:

- progressive loss of memory and cognitive ability
- subtle personality changes
- inability to concentrate
- lethargy
- progressive loss of consciousness

Other neurological symptoms may include:

- myoclonus (involuntary twitching of a muscle or group of muscles)
- nystagmus (rapid, involuntary eye movement)
- tremor
- muscle atrophy and weakness
- dementia
- seizures
- loss of ability to swallow or speak

Reference**:** https://www.ninds.nih.gov/Disorders/All-Disorders/Stroke-Information-Page

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SEQ. #: 6825
Long Name: Post-Op-Neuro - Lower Extremity Paralysis >24 Hours
Short Name: CNParal
Definition: Indicate whether the patient had a new postoperative paralysis of the lower extremities not related to a stroke lasting greater than 24 hours.

Intent/Clarification: Paralysis is a loss of purposeful movement as a result of a neurological injury, drugs, or toxins. Loss of motor function may be complete (paralysis); unilateral (hemiplegic) or bilateral confined to the lower extremities (paraplegic) or present in all four extremities (quadriplegic); and may be accompanied by increased muscular tension and hyperactive reflexes (spastic) or by loss of reflexes (flaccid). Related to spinal cord ischemia, **not related to stroke.**

SEQ. #: 6829
Long Name: Post-Op-Neuro-Paresis >24 Hours
Short Name: CNParesis
Definition: Indicate whether post-operative paresis was present lasting greater than 24 hours.

Intent/Clarification: The intent of this field is to capture paresis lasting > 24 hours related to spinal cord ischemia and not to stroke. Paresis is a condition typified by a weakness of voluntary movement, or by partial loss of voluntary movement or by impaired movement.

SEQ. #: 6833
Long Name: Post-Op-Recurrent Laryngeal Nerve Injury
Short Name: RecLarynNrvInj
Definition: Indicate whether patient has symptoms of recurrent laryngeal nerve injury, (e.g. hoarseness, difficulty speaking, etc.).

Intent/Clarification: Indicate whether post-operative Recurrent Laryngeal Nerve Injury was diagnosed by a provider during initial hospitalization.

The recurrent laryngeal nerve controls movement of the larynx. The larynx contains the apparatus for voice production: the vocal cords, and the muscles and ligaments that move the vocal cords. It also controls the flow of air into the lungs. When the recurrent laryngeal nerve is damaged, the movements of the larynx are reduced. This causes voice weakness, hoarseness, or sometimes the complete loss of voice. The changes may be temporary or permanent.

SEQ. #: 6835
Long Name: Post-Op-Pulm-Vent Prolonged
Short Name: CPVntLng
Definition: Indicate whether the patient had prolonged post-operative pulmonary ventilation > 24.0 hours. The hours of postoperative ventilation time include OR exit until extubation, plus any additional hours following reintubation.

Intent/Clarification: Includes any patient requiring mechanical ventilation > 24 hours postoperatively. To calculate total hours, include initial and additional hours of mechanical ventilation Seq 6600.

SEQ. #: 6838
Long Name: Pulm - Prolonged Ventilation - Tracheostomy Required after OR exit
Short Name: CPVntLngTrachReq
Definition: For patients with initial intubation times greater than 24 hours, indicate if the patient required a tracheostomy after OR exit. Exclude patient who had a tracheostomy prior to OR entry.

Intent/Clarification: Capture all tracheostomies required after OR exit regardless of the location where the tracheostomy was performed. Exclude patient who had a tracheostomy prior to OR entry.

- Yes
- No

SEQ. #: 6840

Long Name: Post-Op-Pulm-Pneumonia

Short Name: CPPneum
Definition: Indicate whether the patient had post-operative pneumonia.

Intent/Clarification: To code post-operative pneumonia there should be a physician diagnosis documented in the medical record based on radiologic evidence as well as symptoms, i.e. fever, leukocytosis, sputum, etc.

SEQ. #: 6850
Long Name: Post-Op-Pulmonary Thromboembolism
Short Name: PulmEmb
Definition: Indicate whether the patient had a pulmonary thromboembolism diagnosed by radiologic study such as V/Q scan, angiogram, or spiral CT.

Intent/Clarification: Pulmonary embolism (PE) is a life-threatening clot formation in one or more pulmonary arteries causing partial or complete obstruction of blood flow to the lung(s). Pulmonary embolism must be documented through diagnostic testing. Capture PE and subsegmental PE's.

SEQ. #: 6860
Long Name: Post-Op-Pleural Effusion Requiring Drainage
Short Name: CPlEff
Definition: Indicate whether a post-operative pleural effusion required drainage via thoracentesis or chest tube insertion.

Intent/Clarification: Interventions include chest tube insertion, needle aspiration or other invasive procedure. Includes hemothorax and chylothorax.

SEQ. #: 6865
Long Name: Post-Op-Pneumothorax Requiring Intervention
Short Name: PostOpPneumo
Definition: Indicate whether the patient had a post-operative pneumothorax requiring intervention.
Intent/Clarification: Interventions include chest tube insertion, needle aspiration or other invasive procedure.

- Do not capture a small pneumothorax that is not treated and followed with serial chest X-rays
- Do not capture a patient that develops a pneumothorax while original chest tubes are in place (not connected to wall suction) and the patient is placed back on wall suction to relieve the pneumothorax in this field.

SEQ. #: 6870

Long Name: Post-Op-Renal-Renal Failure
Short Name: CRenFail
Definition: Indicate whether the patient had acute renal failure or worsening renal function resulting in ONE OR BOTH of the following:

1. Increase in serum creatinine level X 3.0, or serum creatinine ≥ mg/dL 4.0 with at least a 0.5 mg/dL rise.
2. A new requirement for dialysis postoperatively.

Intent/Clarification: Baseline creatinine is the creatinine level closest to the date and time prior to surgery (SEQ 605) but prior to anesthetic management (induction area or operating room). If the patient was on dialysis pre-op, then do not code dialysis as a post-op complication.

If pre-op dialysis (Seq. 375) is equal to "No" and if peak postoperative creatinine level (Seq. 6555) is greater than or equal to 3X last creatinine level pre-op (Seq. 605) or postoperative creatinine (Seq. 6555) is greater than or equal to 4.0 with a 0.5 mg/dL rise or new postoperative dialysis (Seq. 6875) then, renal failure (Seq. 6870) is equal to "Yes".

Note**:** Patient's with a pre-op creatinine SEQ 605 of ≥ 4.0 who develop post-op renal failure, will be excluded from the Risk Adjusted Renal Failure metric since pre-op creatinine ≥ 4.0.

FAQ July 2020 - Can you please explain what an "0.5 Rise" means? Does this mean that if a patient has a preop creatinine of 1.0 prior to surgery and a highest postop creatinine of 1.5 that this patient should be marked as "Renal Failure" in 6870 because he/she had a rise of 0.5?
Answer - One of the indicators for renal failure is a serum creatinine level ≥4 mg/dL with at least a 0.5 mg/dL rise. For example, if your pre-op creatinine was 4.0 or greater and your highest post-op creatinine rises 0.5 or greater then that is coded as renal failure. For example, pre-op crt 4.1 and post-op 4.6 = renal failure.

SEQ. #: 6875
Long Name: Post-Op-Renal-Dialysis Req
Short Name: CRenDial
Definition: Indicate whether the patient had a new requirement for dialysis postoperatively, which may include hemodialysis, peritoneal dialysis.

Intent/Clarification: Include patients who receive dialysis. Do not include patients who need dialysis but refuse or expire prior to initiation of dialysis. May include either hemo or peritoneal dialysis. This includes a one-time need for dialysis as well as implementation of longer-term therapy.

If the patient was on preoperative peritoneal dialysis and moved to hemodialysis postoperatively, this does not constitute a worsening of the condition and should not be coded as an event.

Continuous Veno-Venous Hemofiltration) (CVVH, CVVH-D), Continuous Renal Replacement Therapy (CRRT), and iHD should be coded here as "Yes."

Does not include aquapheresis or ultrafiltration which is for fluid overload and is not counted as dialysis.

SEQ. #: 6880
Long Name: Post-Op-Dialysis Required After Discharge
Short Name: DialDur
Definition: Indicate whether dialysis was required after hospital discharge.

Intent/Clarification: The intent is to separate patients with possible long-term dialysis from those that recovered kidney function prior to discharge.

SEQ. #: 6888
Long Name: Post-Op-Vasc-Iliac/Fem Dissect
Short Name: CVaIlFem
Definition: Indicate whether the patient had a dissection occurring in the iliac or femoral arteries.

Intent/Clarification: The origin of the event may have been at the site of cannulation or a preoperative catheterization insertion site, but the dissection occurred post-operatively.

SEQ. #: 6889
Long Name: Post-Op-Vasc-Acute Limb Ischemia
Short Name: CVaLbIsc
Definition: Indicate whether the patient had any complication producing acute limb ischemia. This may include upper or lower limb ischemia.

Intent/Clarification: Ischemic events are restricted to the arterial system. These do not include venous system events, (i.e. DVT (deep vein thrombosis)). Example: A patient had an IABP removed and experienced an embolus which resulted in a necrotic great toe: Code “Yes” for acute limb ischemia.

Note: If a patient has a necrotic tip of L thumb and L great toe thought to be related to pressors (IABP was in the R), palpable pulses and Doppler studies of arterial all normal, this is not coded as acute ischemic event as this was a low flow perfusion situation and not an acute ischemic event that caused the necrosis.

SEQ. #: 6891
Long Name: Post-Op-Deep Venous Thrombosis
Short Name: DVT
Definition: Indicate whether patient had thrombosis (clot formation) in a deep vein.

Intent/Clarification: Deep vein thrombosis (DVT) occurs when a blood clot (thrombus) forms in one or more of the deep veins in your body, usually in your legs, however, a DVT can develop in any deep vein within the body. A deep vein is a vein that is deep in

the body. This contrasts with superficial veins that are close to the body's surface. Do not capture superficial thrombosis in a vein. The intent is to capture thrombosis (clot formation) in a deep vein.

SEQ. #: 6892
Long Name: Post-Op-Mechanical Assist Device Related Complication
Short Name: CMAD
Definition: Indicate whether there was a post-operative event related to a mechanical assist device.

Intent/Clarification:

- Yes
- No

SEQ. #: 6893
Long Name: Post-Op-Mechanical Assist Device Related Events
Short Name: CMADEvents
Definition: Indicate the type of mechanical assist device related postoperative events that required a procedural or surgical intervention.

Intent/Clarification:

- Cannula/Insertion site issue - Indicate whether the mechanical assist device related postoperative event included a cannula/insertion site issue that required a procedural or surgical intervention. May include bleeding, repair of pseudoaneurysm, surgery to correct retroperitoneal hematoma caused by insertion.

- Hemorrhagic - Indicate whether there was hemorrhage related to a mechanical assist device. Patients are at increased risk of bleeding due to anticoagulation and anti-platelet therapy, non-pulsatile blood flow leading to blood vessel malformation, and changes in blood-clotting factors.

- Thrombotic/Embolic - Indicate whether there was a thrombotic or embolic event related to a mechanical assist device. May include VAD thrombus.

- Hemolytic - Indicate whether there was a hemolytic event related to a mechanical assist device. Patients may experience clinical signs of hemolysis (anemia, low hematocrit, hyperbilirubinemia) and a plasma free hemoglobin >40 mg/dL within 72 hours of VAD implant. Do not include hemolysis resulting from non-device causes.

- Infection - Indicate whether there was infection related to a mechanical assist device. May include insertion (cannula) site infections, driveline/cannula infection, pump pocket infection, VAD endocarditis, or sepsis.

- Other mechanical assist device related complication - Indicate whether any other mechanical assist device related event occurred. May include device

malfunctions, psychiatric episodes.

SEQ. #: 6901
Long Name: Post-Op-New Dysrhythmia Requiring Insertion of a Permanent Device
Short Name: NewRhythmDis
Definition: Indicate if the patient developed a new dysrhythmia requiring insertion of a permanent device. Do not code in the reoperation section even if performed in the OR.

Intent/Clarification: Include permanent pacemakers, implantable cardioverter defibrillators (ICD) and combination devices. Do not code if the patient experiences third degree block and has temporary pacemaker wires inserted, but the block resolves and the patient does not require a permanent pacemaker. Do not include life vests.

SEQ. #: 6905

Long Name: Post-Op-Other-Card Arrest
Short Name: COtArrst
Definition: Indicate whether the patient had an acute cardiac arrest documented by one of the following:
a. Ventricular fibrillation/ Pulseless VT
b. PEA
c. Asystole
d. ICD shocks

Intent/Clarification: The cardiac arrest may be precipitated by ventricular fibrillation/tachycardia, asystole, or pulseless electrical activity (PEA). Code yes for sudden events requiring CPR or defibrillation (includes ICD shock for VT/Vfib). It is expected that all deaths inevitably have cardiac arrest, but this field is to capture those events that are not expected and sudden or acute in occurrence.

SEQ. #: 6907
Long Name: PostOp - Other - Aortic Complication
Short Name: AorticComp
Definition: Indicate if the patient had an aortic related complication. Complications include aortic dissection, post-op aortic endoleaks, aortic side branch malperfusion, or aortic stent graft induced entry tear.

Intent/Clarification:

- Yes
- No

SEQ. #: 6909
Long Name: Post-Op-Other-Aortic Dissection

Short Name: CVaAoDis
Definition: Indicate whether the patient had a dissection occurring in any part of the aorta.

Intent/Clarification: This includes ascending, arch, descending, thoracic or abdominal aorta. Aortic dissection is bleeding into or along the wall of the aorta. This does not include an aneurysmal event unless it goes on to rupture or dissect.

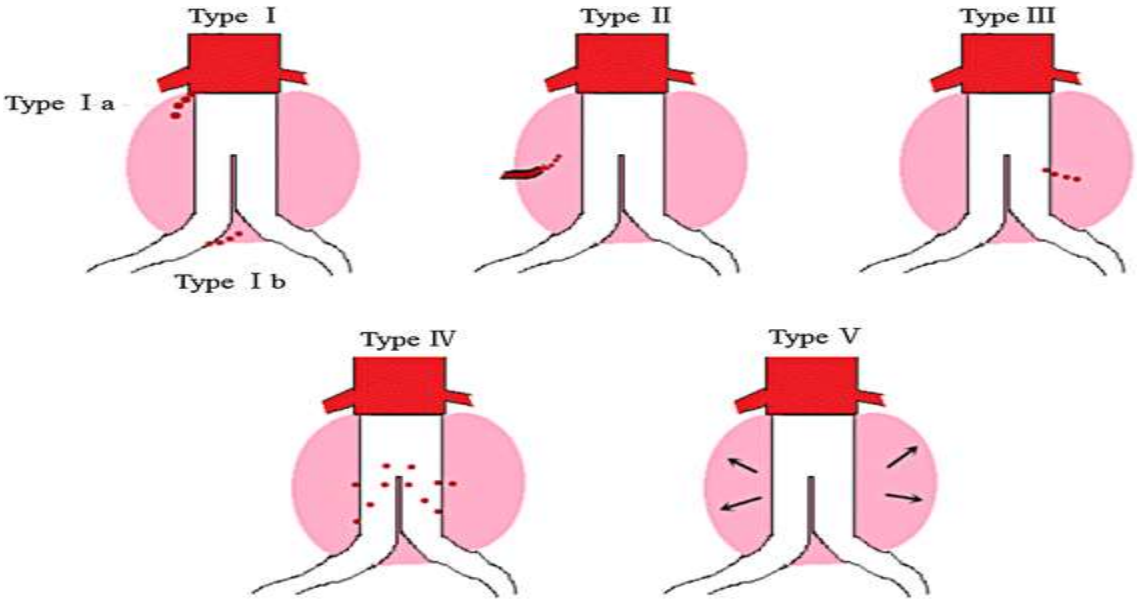
SEQ. #: 6921
Long Name: Post-Op-Other-Aortic Endoleak
Short Name: COtAortEndo
Definition: Indicate whether a post-operative endoleak occurred.

Intent/Clarification: An endoleak is defined as persistent blood flow in the aneurysm sac through and around the endovascular seal and is the most common complication after endovascular aneurysm repair.

SEQ. #: 6922
Long Name: Post-Op-Other-Aortic Endoleak Type
Short Name: COtAortEndoTy
Definition: Indicate the type of endoleak.

Intent/Clarification:

- Ia - A Type Ia endoleak is defined as a leak occurring at the proximal seal zone.
- Ib - A Type Ib endoleak is defined as a leak occurring at the distal seal zone.
- II - A Type II endoleak is defined as retrograde filling of the aneurysm sac or false lumen in the case of dissection by aortic branch vessels (e.g. left subclavian artery, intercostal arteries, etc.).
- III – A Type III endoleak is defined as leakage of blood into the aneurysm sac, or false lumen in the case of dissection, due to either a gap between separate endograft components, or a defect in the fabric of the graft secondary to graft strut fracture or erosion.
- IV - A Type IV endoleak is defined as the presence of an endoleak secondary to graft porosity. All other types of endoleaks must be definitively ruled out prior to selecting this diagnosis.
- V - A Type V endoleak, also known as endotension, is defined as persistent aneurysm expansion in the absence of a confirmed endoleak.



SEQ. #: 6926
Long Name: Post-Op-Other-Aortic Side Branch Malperfusion
Short Name: COtAortSide
Definition: Indicate whether aortic side branch malperfusion occurred.

Intent/Clarification: Malperfusion is defined as inadequate blood flow to a tissue bed. The intent is to identify whether there is compromised blood flow to any branch vessel in the post-operative period. Radiology report or the surgeon's evaluation may be used to define this.

- Yes - If any vessel has compromised blood flow report "yes".
- No

SEQ. #: 6927
Long Name: Post-Op-Other-Aortic Stent Graft Induced Entry Tear
Short Name: COtAortTear
Definition: Indicate whether an aortic stent graft induced entry tear occurred.

Intent/Clarification: Stent graft-induced new entry (SINE) is a new tear caused by the stent graft itself. This is typically due to fracture by a balloon or endograft, and the result is the creation of a new fenestration/connection between the true and false lumens of the dissection (so-called stent graft induced new entry tear (SINE)). This would typically be determined by the surgeon's assessment of the intraoperative completion angiogram, intravascular ultrasound, and/or transesophageal echocardiography.

SEQ. #: 6929
Long Name: Post-Op-Other-Anticoagulant Bleeding Event
Short Name: COtCoag
Definition: Indicate whether the patient had bleeding, hemorrhage, and/or embolic events related to anticoagulant therapy postoperatively.

Intent/Clarification: The intent of the field is to capture those patients that bleed, hemorrhage and /or suffer an embolic event related to anticoagulant therapy received post-op.

Abnormal coagulation lab tests without clinical events are not included.

Patients with bleeding secondary to surgical suture ‘leaking’ or general surgical ‘oozing’ are not to be included.

SEQ. #: 6930
Long Name: Anticoagulant Bleeding Event Type
Short Name: AnticoagBleedEvntType
Definition: Indicate the type of anticoagulation bleeding event. Anticoagulation bleeding events include intracerebral, subdural, or gastrointestinal.

Intent/Clarification: The intent is to capture the following types of bleeds that occur related to anticoagulant therapy postoperatively.

- Intracerebral - Intracerebral hemorrhage (ICH), also known as cerebral bleed, is a type of intracranial bleed that occurs within the brain tissue or ventricles**.** A subarachnoid hemorrhage (SAH) is bleeding in the space between your brain and the surrounding membrane (subarachnoid space).

- Subdural - Subdural hematoma (SDH) is an accumulating mass of blood, usually clotted, or a swelling that is confined to the space between the dura mater and the subarachnoid membrane.

- Gastrointestinal - Gastrointestinal bleeding (GI bleed), also known as gastrointestinal hemorrhage, is all forms of bleeding in the gastrointestinal tract, from the mouth to the rectum.

SEQ. #: 6931
Long Name: Heparin Induced Thrombocytopenia (HIT)
Short Name: HIT
Definition: Indicate if the patient was diagnosed with Heparin Induced Thrombocytopenia. Diagnosis can occur with confirmation from an outside facility after patient's discharge.

Intent/Clarification: Heparin induced thrombocytopenia (HIT) is defined as a decrease in platelet count shortly after starting heparin, which resolves after stopping heparin and has no other apparent cause. Mild thrombocytopenia occurring within four days of starting heparin is the result of a direct effect of heparin on platelets. It is not immune mediated but appears to be caused by a direct agglutinating effect of heparin on platelets. It is not associated with thrombosis and resolves despite the continuation of treatment.

HIT predisposes to thrombosis (the abnormal formation of blood clots inside a blood vessel) because platelets release microparticles that activate thrombin and can progress to Heparin Induced Thrombocytopenia Thrombosis.

HIT (Heparin Induced Thrombocytopenia) is diagnosed with Heparin Assay and or SRA (Serotonin Release Assay) laboratory tests.

Note**:** Patients with a positive HITA test followed by a negative SRA (Serotonin Release Assay) should not be coded as being HIT positive, even if the SRA results come back after the patient was discharged, since oftentimes these labs are sent out to be read and may take a while to get back.

SEQ. #: 6932
Long Name: Heparin Induced Thrombocytopenia Thrombosis
Short Name: HITT
Definition: Indicate if the patient was diagnosed with Heparin Induced Thrombocytopenia Thrombosis.

Intent/Clarification: HITT is a child field of HIT. Severe thrombocytopenia, usually occurring between four and 14 days after starting heparin, is associated with both arterial and venous thrombosis (HIT/T or HITT) and appears to be immune mediated. Immune HIT/T or HITT should be considered whenever the platelet count falls by 50% in a patient receiving heparin.

Heparin induced thrombocytopenia thrombosis (HIT/T or HITT) is associated with a high morbidity and mortality.

SEQ. #: 6933
Long Name: Post-Op-Other-Pericardiocentesis
Short Name: COtTamp
Definition: Indicate whether the patient had a pericardiocentesis to remove fluid in the pericardial space compromising cardiac filling.

Intent/Clarification: Tamponade, fluid accumulation between the myocardium and pericardium of the heart, inhibits filling of the heart and results in hemodynamic compromise. Severity of tamponade may dictate the degree of intervention (surgical or pericardiocentesis).

Note: This field is for those events that do not require a return to the operating room for treatment.

SEQ. #: 6935
Long Name: Post-Op-Other-Gastro-Intestinal Event
Short Name: COtGI
Definition: Indicate whether the patient had a postoperative occurrence of any GI event, including but not limited to:

- GI bleeding requiring transfusion
- Pancreatitis with abnormal amylase/lipase requiring nasogastric (NG) suction therapy
- Cholecystitis requiring cholecystectomy or drainage

- Mesenteric ischemia requiring exploration
- Hepatic failure
- Prolonged ileus
- Clostridium difficile

Intent/Clarification: GI events may require medical management, observational management, or surgical intervention to control. Both intrinsic and extrinsic factors can cause GI events.

DO NOT include events such as prolonged nausea and/or vomiting with no other documented physiological cause. Refer to the specific list included within the definition.

Note: For patients with documentation of ileus post-op the intent is to capture patients with prolonged ileus that require invasive treatment or prolonged length of stay. Example: A patient experiences a postoperative paralytic ileus that does not increase the length of stay and does not require invasive therapy. Do not code a GI complication.

SEQ. #: 6936
Long Name: Gastro-Intestinal Event Type
Short Name: GIEventType
Definition: Indicate the type of gastrointestinal event.

Intent/Clarification:

- Ischemic Bowel - Intestinal ischemia describes a variety of conditions that occur when blood flow to the intestines decreases due to a blocked blood vessel, usually an artery. Intestinal ischemia can affect the small intestine, large intestine (colon) or both. Includes ischemic colitis, acute mesenteric ischemia, pneumoperitoneum, and abdominal compartment syndrome.

- Gastrointestinal - Gastrointestinal bleeding (GI bleed), also known as gastrointestinal hemorrhage, is all forms of bleeding in the gastrointestinal tract, from the mouth to the rectum.

- Pancreatitis - Pancreatitis is a condition characterized by inflammation of the pancreas.

- Cholecystitis - Cholecystitis is inflammation of the gallbladder.

- Liver Dysfunction/Liver Failure - Liver failure is the inability of the liver to perform its normal synthetic and metabolic function as part of normal physiology. Includes shock liver, hepatitis B, hepatitis C, drug induced hepatitis, auto-immune hepatitis, cirrhosis, portal hypertension, esophageal varices, liver transplant, or congestive hepatopathy. Exclude NASH (Nonalcoholic steatohepatitis) in the absence of cirrhosis. The following are not coded as liver dysfunction/failure:

Hepatitis A, Hepatitis E, Gilbert's syndrome, fatty liver, liver cancer and transient elevation of liver enzymes.

- Ileus- **The intent is to capture prolonged postoperative ileus** (POI). Prolonged POI is characterized by abdominal distention, nausea, vomiting and delayed passage of flatus and stool. Prolonged postoperative ileus contributes significantly to longer hospitalization and increased healthcare costs. Treatment includes bowel rest, supportive care, and treatment of any underlying exacerbating factors.

- Other – Includes Clostridium difficile

Note: For patients with documentation of ileus post-op the intent is to capture patients with prolonged ileus that require invasive treatment or prolonged length of stay. Example: A patient experiences a postoperative paralytic ileus that does not increase the length of stay and does not require invasive therapy. Do not code a GI complication.

SEQ. #: 6945

Long Name: Post-Op-Other-A Fib
Short Name: COtAFib
Definition: Indicate whether the patient experienced atrial fibrillation/flutter (AF) after OR Exit that a) last longer than one hour, or b) lasts less than one hour but requires medical or procedural intervention. Exclude patients who were in AFib at the start of surgery (OR Entry).

Intent/Clarification: Capture event(s) in all patients regardless if they have had a history of recent or remote **A-fib, A-fib / flutter, or A-flutter** who were not in A-fib, A-fib / flutter, or A-flutter at the start of surgery.

Medical or procedural intervention includes cardioversion for A-fib, A-fib / flutter, or A-flutter, AFib ablation, and medication to treat A-fib, A-fib / flutter, or A-flutter.

Use the first rhythm documented on the anesthesia record to determine if the patient is in A-fib, A-fib / flutter, or A-flutter at the time of entry to OR. If there is no documentation on the anesthesia record, then use the rhythm documented closest to OR entry to determine if patient in A-fib, A-fib / flutter, or A-flutter.

Example # 1: A patient is on beta blockers post-op and is titrating each day to give higher doses. The second post-op day the patient has a two-hour run of AFib. During this run of AFib, the beta blocker is increased, or an extra dose of beta blocker is given. This is considered a post-op AFib event.

Example # 2: A patient who has no history of AFib is on an AFib protocol preoperatively to prevent post-op AFib; the patient then goes in to atrial fibrillation (AF) postoperatively and the protocol is not adjusted: this should be coded "Yes" as a post op AFib event.

Discharge / Mortality

General Concepts:

GENERAL INFORMATION: Accurate coding mortality is especially important to the integrity of the database.

All patients discharged alive should be followed for 30 days after the date of surgery to capture whether the patient is alive or dead at the end of the 30th day after the day of index surgery.

Any patient that dies within 30 days should be coded as a mortality regardless of the cause of death.

Patients that remain in the hospital and die, even if after 30 days following the index surgery are coded as "Died in Hospital".

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database. Please gather as much of the post-op information ICU hours, blood use, and complications from the hospital that the patient was transferred to as you can. As the patient is not technically discharged until they are discharged from the hospital you transferred them to.

Patients who are discharged to Hospice will be included as an operative mortality.

For patients who are declared dead and become organ donors, use the date and time on the death certificate (when the patient was pronounced dead) even if organs are not harvested until a later date.

30 Day Mortality / 30 Day Readmission / 30 Day DSWI Infection Log – Data Managers need to keep some type of log to include verification source, date assessed, and status of mortality, readmit, and DSWI. For example, this can be done on an excel spreadsheet or a document attached to DCF such as John Doe - Surgery 1/1/20 - Discharge 1/5/20 - checked with MD office and checked Medical Record on 2/6/20 and alive with no infection or readmit.

SEQ. #: 7001
Long Name: Mort-Status at 30 Days After Surgery (either discharged or in-hospital)
Short Name: Mt30Stat
Definition: Indicate whether the patient was alive or dead at 30 days post-surgery (whether in hospital or not).

Intent/Clarification:

- Alive
- Dead
- Unknown

SEQ. #: 7003
Long Name: Patient Transfer to Another Acute Hospital
Short Name: DischMtPtTrnfAcuteHosp
Definition: Indicate if the patient was transferred to another acute care hospital.

Intent/Clarification: This is for internal tracking purposes so that the participant will know when the patient left their hospital and transferred to another acute care hospital.

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database.

- Yes
- No

SEQ. #: 7004
Long Name: Patient Transfer to Another Acute Hospital - Date
Short Name: DischMtPtTrnfAcuteHospDt
Definition: Indicate the date the patient was transferred to another acute care hospital.

Intent/Clarification: This is for internal tracking purposes so that the participant will know when the patient left their hospital and transferred to another acute care hospital. Format: Date mm/dd/yyyy

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SEQ. #: 7005
Long Name: Patient Still in Acute Care Hospital Setting
Short Name: DischMtPtAcuteHospStill
Definition: Indicate if the patient is still in the acute care setting after the index procedure. Once the patient is discharged from the acute care setting (either from performing hospital or subsequent transfers) choose no and proceed with discharge/mortality data.

Intent/Clarification: This field refers to patient's that are in the hospital at the 30-day mark that were never discharged. It is provided so sites do not get marked as missing on the required mortality fields for their composite scores/STAR ratings.

SEQ. #: 7006
Long Name: Hospital Discharge Date
Short Name: DischDt
Definition: Indicate the date the patient was discharged from the hospital (Acute Care Facility). If the patient died in the hospital, the discharge date is the date of death.

Intent/Clarification:
Required date format: mm/dd/yyyy. **Date of discharge is a child field of sequence number 7005 and can only be completed when the patient is discharged.**

If the patient died in the hospital (acute care), the discharge date is the date of death.

Note**:** For patients who are declared dead and become organ donors, use the date and time on the death certificate (when the patient was pronounced dead) even if organs are not harvested until a later date.

Note: Indicate the date the patient was discharged from the hospital (acute care) even if the patient is going to a rehab or hospice or similar extended care unit within the same physical facility.

Note: Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database.

SEQ. #: 7007
Long Name: Status at Hospital Discharge
Short Name: DischMortStat
Definition: Indicate the patient's status at hospital discharge.

Intent/Clarification:

- Discharged Alive, last known status alive (other than Hospice) – Includes patients who are discharged alive. Does not include hospice discharge – see choice below for discharged to hospice.
- Discharged Alive, died after discharge - Includes patients who are discharged alive and expire after discharge.
- Discharged to Hospice – Includes patients who are discharged to inpatient or outpatient hospice and home hospice.
- Died in hospital - Includes patients that remain in acute care hospital where the index surgical procedure was performed and die, even if after 30 days following the index surgery. Includes any patient that dies at another acute care hospital after transfer even if after 30 days following the index surgery.

SEQ. #: 7010
Long Name: Discharge Location
Short Name: DisLoctn
Definition: Indicate the location to where the patient was discharged.

Intent/Clarification: Skilled Nursing Facilities (SNF) are nursing facilities with staff and equipment to give skilled nursing care and, in most cases, skilled rehabilitative care services. You will need to investigate the intent of discharge. If the intent of discharge is for a patient from the hospital to go to a SNF for rehabilitation and to eventually discharge home, then Code as Extended Care/Transitional Care/Rehab. If the intent of discharging to a SNF is for a higher level of care without the intent of discharging home,

then chose nursing home. You will often be able to locate the intent within the discharge planning documents by Social Service, Case Management, and/or Physical Therapy.

- Home – Includes assisted living or temporarily, at the home of a relative.
- Extended Care/Transitional Care Unit /Rehab – Includes short-term inpatient and outpatient rehab facilities and long-term acute care hospital (LTACH, LTAC, LTCH). Long-term acute care hospital is not part of the acute care stay. May include Skilled Nursing Facilities (SNF). Skilled Nursing Facilities (SNF) are nursing facilities with staff and equipment to give skilled nursing care and, in most cases, skilled rehabilitative care services. You will need to investigate the intent of discharge. If the intent of discharge is for a patient from the hospital to go to a SNF for rehabilitation and to eventually discharge home, then Code as Extended Care/Transitional Care/Rehab.
- Nursing Home - Nursing Home is a residence where skilled care or acute care is not required. May include SNF if the intent of discharging to a SNF is for a higher level of care without the intent of discharging home, then chose nursing home.
- Left AMA – Left Against Medical Advice
- Other – Includes prison, jail, homeless shelter

SEQ. #: 7011
Long Name: Extended Care/Transitional Care Unit/Rehab - Type
Short Name: DisLExtCareTCURehabTy
Definition: Indicate the type of extended care, transitional care unit, or rehab unit the patient was discharged from acute care to.

Intent/Clarification: Many times, you will be able to locate the type of extended care, transitional care unit, or rehab unit the patient was discharged to in the discharge planning documents by Social Service, Case Management, and/or Physical Therapy.

- **Acute Short-term Rehab -** Includes short-term inpatient and outpatient rehab facilities and Skilled Nursing Facilities (SNF) with skilled rehabilitative care services.
- **Long-term Rehab -** Long-Term Acute Care (LTACH, LTAC, LTCH) treat higher acuity patients (i.e. prolonged ventilation) where the goal is medical recovery with return to a residence such as home, nursing home, or with family.
- **Unknown**

SEQ. #: 7015
Long Name: Cardiac Rehabilitation Referral
Short Name: CardRef
Definition: Indicate whether advice was given, or discussion conducted with the patient (by physician, nurse, or other personnel) regarding the importance of joining a cardiac rehabilitation program, or an appointment made.

Intent/Clarification: Identify those patients who are referred to post discharge outpatient cardiac reconditioning and rehabilitation (Phase II OPCR). Do not count Phase I, in hospital rehab, as “Yes”. Cardiac rehabilitation programs are many times free standing or external to an acute care setting. Cardiac rehabilitation programs are

designed specifically for the patients with cardiac disease who have medical and/or surgical recovery needs.

Time frame for Cardiac Rehab referral is at or prior to discharge.

NQF 0643 - Outpatient Cardiac Rehab (OPCR) is required for patients who had had Coronary Artery Bypass Graft, Percutaneous Coronary Intervention, Cardiac Valve surgery, Cardiac Transplant or Acute Myocardial Infarction. Patients that are not listed as required for OPCR referral, may or may not have a referral as deemed appropriate by the Provider. If no referral is made, then code as NO unless the patient meets the below definitions for NA. There is no metric for OPCR referral.

- Yes - The following documentation will support coding 'Yes' cardiac rehabilitation referral provided:
    - Advice was given or discussion conducted with the patient (by physician, nurse, or other personnel) regarding the importance of joining a cardiac rehabilitation program.
    - Patient educated on cardiac rehab activities / exercises to be completed at home.
    - If the patient is discharged with home health but a discussion regarding Phase II Cardiac Rehab occurred, choose "Yes".
    - An appointment for OPCR was made prior to discharge.
- No - When there is no reference to cardiac rehabilitation in the documentation or a rationale why a referral was not provided is missing, please code No to cardiac rehab referral.
- Not Applicable - The following documentation will support coding 'NA' to cardiac rehabilitation referral provided:
    - Patients who are documented as medically, mentally, or emotionally inappropriate for a referral, should be identified as "Not Applicable". Patients sent to rehab / transitional care/ SNF with plans to return home are not included in this category unless there is clear documentation to support why a referral to OPCR was not made.
    - If the surgery was of Non-Cardiac nature (See Section N), code as "Not Applicable".

In response to the Covid-19 pandemic: In addition to what is in the TM above, the following documentation will support coding 'Yes' cardiac rehabilitation referral provided.

- Documented education on cardiac rehab activities / exercises to be completed at home.
- Documented advice or discussion conducted with the patient (by physician, nurse, or other personnel) regarding the importance of joining a phase II cardiac rehabilitation program, even if cardiac rehabilitation program is closed due to Covid.

The following documentation will support coding NA to cardiac rehabilitation referral provided.

- Documented advice given on the importance of joining a CR Phase II program, however the patient is documented to not be a candidate for CR Phase II due to elevated risk of Covid-19 exposure.

When there is no reference to cardiac rehabilitation in the documentation or a rationale why a referral was not provided is missing, please code No to cardiac rehab referral.

SEQ. #: 7016
Long Name: Substance Use Screening and Counseling Performed (NQF 2595)
Short Name: SubsUseScrnCounPerf
Definition: Indicate if substance use screening and appropriate counseling was performed. This is NQF measure 2595. Patients require screening on tobacco use, alcohol use, and illicit/non-prescription drug use. Patient must be screened for all three. If the patient screens positive for any listed substance use, appropriate counseling is required to choose yes for this field.

Intent/Clarification: This is NQF measure 2597. Indicate patients who were screened by a healthcare provider, nurse, or an allied healthcare provider at least once within the last 24 months for tobacco use, unhealthy alcohol use, non-medical prescription drug use, and illicit drug use AND who received an intervention for all positive screening results. Time frame 24 months prior to episode of care until discharge of episode of care.

Patient must be screened for all three. If the patient screens positive for any listed substance use, appropriate counseling is required to code YES for this field.

- Tobacco use component: Patients who are screened for tobacco use and who received tobacco cessation intervention if identified as a tobacco user. Counseling should be provided to users of Cigarettes, Pipe, Cigars, Smokeless Cans, Other tobacco products (e-cigs, orbs, strips, sticks, hookah, etc.)

- Unhealthy alcohol use component: Patients who were screened for unhealthy alcohol use (as determined by each facility) using a systematic screening method (as determined by each facility) and who received brief counseling if identified as an unhealthy alcohol user.

- Drug use component (nonmedical prescription drug use and illicit drug use): Patients who were screened for nonmedical prescription drug use and illicit drug use using a systematic screening method(as determined by each facility) and who received brief counseling if identified as a nonmedical prescription drug user or illicit drug user.

If the patient is medically, mentally, or emotionally inappropriate for a referral, select “Not Applicable”.

https://aspe.hhs.gov/report/review-medication-assisted-treatment-guidelines-and-measures-opioid-and-alcohol-use/appendix-d-substance-use-medication-assisted-treatment-and-other-related-measures

FAQ August 2020 - Patient was screened for tobacco, alcohol and illicit drug use, but the patient was not positive for tobacco, alcohol or drug use. How do I code SEQ 7016? Answer - This is a 2 part question did you screen and did you provide counseling if necessary. In this scenario, code “Yes” you screened the patient for tobacco, alcohol and illicit drug use and no counseling was needed.

MEDICATIONS PRESCRIBED AT DISCHARGE

GENERAL INFORMATION:

Discharge medications should only be captured for the patient transferred to another acute care facility at the time of ultimate disposition from the hospital.

Contraindications for discharge medication requires documentation of a contraindication for the class of medications when applicable such as statin, beta blockers, ADP inhibitors etc. not just one medication in the medication class. For example, a documented contraindication for Toprol at discharge would need to be documented as a contraindication for Beta Blockers, instead of one drug in the medication class.

Patient refusal of medication - Patient refusal of medication can be captured as contraindicated if the refusal is clearly documented in the medical record. For example, “Patient educated on importance of taking statin at discharge and patient refused to take the medication.”

If medications are not appropriate for a patient on comfort measures only and discharged to hospice, code contraindicated as not all centers withhold medications for patients going to hospice.

Addendums can be accepted for STS data, but only for events that occurred prior to discharge. For example, the patient was not sent home on a Beta Blocker because of a contraindication. The contraindication was not documented at the time of discharge. The data manager notified the Surgeon of the discrepancy in documentation and the surgeon addended his discharge summary according to hospital policy to indicate the contraindication. This would be an acceptable addendum.

An example of an unacceptable addendum - The patient was discharged without an order for Beta-Blocker Therapy. The surgeon’s office noticed on the first post-discharge visit and called in the prescription 6 days after discharge. The Surgeon addended his Discharge Summary to indicate that the patient was discharged on Beta Blocker Therapy. In this scenario, code No, the medication has to be prescribed at the time of discharge

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SEQ. #: 7060
Long Name: Aspirin - Discharge
Short Name: DCASA
Definition: Indicate whether or not the patient was discharged from facility on Aspirin, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Includes enteric coated and/or baby aspirin. Aspirin acts to “*decrease”* the blood viscosity and inhibits the clotting of platelets.

- **Yes**: Capture those who receive an order for Aspirin at discharge that contains at least 75mg Aspirin. Aggrenoxwhich is only 25 mg is not included.
- **No**: Patient did not receive an Aspirin order at discharge
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record, such as notation of a medication allergy by Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

If the patient is in the PREVENT II trial where ASA vs Placebo are given at discharge, leave Seq 7060 blank.

SEQ. #: 7070

Long Name: ADP Inhibitors - Discharge

Short Name: DCADP
Definition: Indicate whether or not the patient was discharged from facility on an ADP inhibitor, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: These medications inhibit adenosine diphosphate (ADP) induced platelet aggregation (clotting) are often used to treat patients with a history of atherosclerotic cardiovascular disease to potentially reduce the incidence of major cardiovascular events (stroke, peripheral arterial disease, etc.).

- **Yes**: Capture those who receive an order for an ADP Inhibitor at discharge. Code P2Y12 as an ADP Inhibitor in sequence number 7070.
- **No**: Patient did not receive an ADP Inhibitor order at discharge
- **Contraindicated**: Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record, such as notation of a medication allergy by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7075
Long Name: Other Antiplatelet - Discharge
Short Name: DCOthAntiplat
Definition: Indicate whether or not the patient was discharged from facility on any other antiplatelet medication, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification:

- **Yes**: Capture those who receive an order for any other antiplatelet medication at discharge. Includes Cilostazol (Pletal), Aggrenox, and Dipyridamole.

- **No:** Patient did not receive any other antiplatelet medication order at discharge
- **Contraindicated:** Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7081
LongName: Direct Oral Anticoagulant - Discharge
Short Name: DCDirOralAnticoagShort
Definition: Indicate whether or not the patient was discharged from facility on Direct Oral Anticoagulant, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification:
Direct oral anticoagulant (DOAC) drugs such as Xarelto (rivaroxaban), Eliquis (apixaban), Pradaxa (dabigatran etexilate), and Savaysa (edoxaban) are alternatives to warfarin. They are collectively referred to as novel oral anticoagulants (NOACs) or directly acting oral anticoagulants (DOACs). They have been shown to be as good as, or possibly better, than Coumadin with less serious side effects. The newer anticoagulants (NOACs/DOACs), are more expensive than the traditional ones and should be used with care in patients with kidney problems. This includes oral Direct Factor Xa inhibitors (“xabans “) and oral Thrombin Inhibitors.

- **Yes**: Capture those who receive an order for Direct Oral Anticoagulant medication at discharge.
- **No:** Patient did not receive Direct Oral Anticoagulant medication order at discharge
- **Contraindicated:** Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7085
Long Name: Warfarin (Coumadin) - Discharge
Short Name: DCCoum
Definition: Indicate whether or not the patient was discharged from facility on Warfarin (Coumadin), or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: The primary action of Coumadin/Warfarin is to prevent or delay blood coagulation.

- **Yes**: Capture those who receive an order for warfarin at discharge
- **No**: Patient did not receive a warfarin order at discharge

- **Contraindicated**: Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons, or is evidenced clearly within the medical record, such as notation of a medication allergy by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7095
Long Name: Other Anticoagulant - Discharge
Short Name: DCOthAnticoag
Definition: Indicate whether or not the patient was discharged from facility on any other anticoagulant, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Examples: Unfractionated Heparin or Low Molecular Weight Heparin such as Enoxaparin/Lovenox, Dalteparin, Tinzaparin

- **Yes:** Capture those who receive an order for any other anticoagulant medication at discharge.
- **No:** Patient did not receive an order for any other anticoagulant medication at discharge
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7100
Long Name: ACE or ARB Inhibitors - Discharge
Short Name: DCACE
Definition: Indicate whether or not the patient was discharged from facility on ACE or ARB Inhibitors, or if it was contraindicated or not indicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Primary use is for the treatment of hypertension but is also an essential treatment for congestive heart failure (reduces the workload of the heart). Routine, lifelong use of angiotensin converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARB) is recommended for heart failure patients with a lower than usual ejection fraction (40 percent or less). Action is to dilate blood vessels to improve the amount of blood the heart can pump and thereby reducing the workload on the heart.

- **Yes** - Capture those who receive an order for an ACE or ARB inhibitor medication at discharge. Entresto (Sacubitril/Valsartan) should be captured as ACE or ARB inhibitor at discharge.
- **No** – Patient did not receive an ACE or ARB inhibitor medication order at discharge

- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded or medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.
- **Not indicated –** can be coded for any one of the following:

    1. Patient has no history of CHF.
    2. The last EF recorded prior to discharge is > 40%.
    3. The Provider documents that ACE/ARB is not indicated in the patient.

http://www.onlinejacc.org/content/62/16/e147?ijkey=6bd987f1043971ba05634577cbe60be7b2119469&keytype2=tf_ipsecsha

FAQ September 2020 - The training manual states we should take the last EF prior to discharge to determine if an ACE/ARB is required due to an EF < = 40%. A patient had a pre op EF of 46%. His post anesthesia, pre incision echo has EF of 35-40%. He has no other echo done prior to discharge. Would I use the intra op pre-incision echo results to determine the ACE/ARB at discharge? Answer - If an intraop-post surgery EF or a post-op EF had been done then the later of the 2 would be the last EF. In this scenario, the last EF prior to surgery would be the last EF to use. We would not recommend using the intra-op pre-incision EF results to determine if an ACE/ARB is needed at discharge.

SEQ. #: 7103
Long Name: Amiodarone - Discharge
Short Name: DCAmiodarone
Definition: Indicate whether or not the patient was discharged from facility on Amiodarone, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Note that this value is specific to Amiodarone, rather than anti-arrhythmic drugs in general. Amiodarone is effective in situations where other anti-arrhythmic may fall short. Dronedarone (Multaq) may be coded as Amiodarone.

- **Yes** - Capture those who receive an order for Amiodarone or Multaq at discharge.
- **No** – Patient did not receive an Amiodarone or Multaq order at discharge.
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7105

Long Name: Beta Blockers - Discharge

Short Name: DCBeta
Definition: Indicate whether or not the patient was discharged on beta blockers, or if beta blocker was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

I**ntent/Clarification:** Beta blockers have been proven to increase survival of cardiac patients following MI and in the perioperative period. Beta blockers are used for the treatment of high blood pressure, treating chest pain or angina, controlling irregular heart rhythms, slowing ventricular rate response and for the treatment of congestive heart failure.

- **Yes** - Capture those who receive an order for a beta blocker medication at discharge.
- **No** – Patient did not receive a beta blocker medication order at discharge.
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7115
Long Name: Lipid Lowering Statin - Discharge
Short Name: DCLipLowStat
Definition: Indicate whether or not the patient was discharged from facility on a Statin, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Lipid lowering medications block the production of cholesterol and fat. Depending upon the specific medication, each may target unique levels such as HDL (good cholesterol), LDL (bad cholesterol) and triglycerides or polipoprotein B (protein needed to produce cholesterol). They may also reduce the absorption of dietary cholesterol by combining with the cholesterol to remove it from the bloodstream.

Statin medications typically have a generic name ending in the suffix ‘statin’. However, some combination statin/non- statin drugs have other generic names. Do not capture non-statins here unless combined with a statin.

- **Yes** - Capture those who receive an order for a statin at discharge.
- **No** – Patient did not receive a statin order at discharge
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

SEQ. #: 7120
Long Name: Lipid Lowering - Other - Discharge
Short Name: DCLipLowNonStat

Definition: Indicate whether or not the patient was discharged from facility on a lipid-lowering medication other than a statin, or if it was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, pharmacist or physician assistant.

Intent/Clarification: Non-statin and other medications prescribed at discharge do not meet the measures according to the American Heart Association (AHA), Lipid lowering medications block the production of cholesterol and fat. Depending upon the specific medication, each may target unique levels such as HDL (good cholesterol), LDL (bad cholesterol) and triglycerides or polipoprotein B (protein needed to produce cholesterol). They may also reduce the absorption of dietary cholesterol by combining with the cholesterol to remove it from the bloodstream. AHA guidelines favor Statin use and question efficacy of non-statins.

Examples: Fish oils, Niacor, Niaspan, Zetia, Fenofibrate, Tricor, Triglide, Lopid, Colestid, Prevalite, Questran, Welchol, Repatha

- **Yes** - Capture those who receive an order for a non-statin medication at discharge.
- **No** – Patient did not receive a non-statin medication order at discharge
- **Contraindicated** - Documented evidence of contraindication. If a contraindication is documented explicitly as excluded for medical reasons or is evidenced clearly within the medical record (notation of a medication allergy prior to arrival) by a Physician, Nurse Practitioner, Anesthesia, Physician Assistant, or Pharmacist.

MORTALITY GENERAL INFORMATION:

Accurately coding mortality is especially important to the integrity of the database.

All patients discharged alive should be followed for 30 days after the date of surgery to capture whether the patient is alive or dead at the end of the 30th day after the day of index surgery.

Any patient that dies within 30 days should be coded as a mortality regardless of the cause of death.

Patients that remain in the hospital and die, even if after 30 days following the index surgery are coded as "Died in Hospital".

Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Any patient that dies at another acute care hospital after transfer should be coded as a mortality in the database.

Patients who are discharged to Hospice will be included as an operative mortality.

For patients who are declared dead and become organ donors, use the date and time on the death certificate (when the patient was pronounced dead) even if organs are not

harvested until a later date. If there is no death certificate in the medical record, use the death note.

30 Day Mortality / 30 Day Readmission / 30 Day DSWI Infection Log – Data Managers need to keep some type of log to include verification source, date assessed, and status of mortality, readmit, and DSWI. For example, this can be done on an excel spreadsheet or a document attached to DCF such as John Doe - Surgery 1/1/20 - Discharge 1/5/20 - checked with MD office and checked Medical Record on 2/6/20 and alive with no infection or readmit.

SEQ. #: 7121
Long Name: Mortality-Date
Short Name: MtDate
Definition: Indicate the date the patient was declared dead.

Intent/Clarification: Provide the date the patient was declared dead. You can enter the mortality date for the discharged patient in the Database regardless of whether it has been greater than 30 days from the date of surgery. However, you are only required to follow patients discharged alive for 30 days after the date of surgery to capture whether the patient is alive or dead at the end of the 30th day after the day of index surgery.

Date in the format mm/dd/yyyy.

For patients who are discharged alive and die after discharge, enter both the date of discharge and the mortality date.

For patients who are declared dead and become organ donors, use the date and time on the death certificate (when the patient was pronounced dead) even if organs are not harvested until a later date. If there is no death certificate in the medical record, use the death note.

SEQ. #: 7124
Long Name: Mort-Operative Mortality
Short Name: MtOpD
Definition: Operative Mortality includes: (1) all deaths, regardless of cause, occurring during the hospitalization in which the operation was performed, even if after 30 days (including patients transferred to other acute care facilities); and (2) all deaths, regardless of cause, occurring after discharge from the hospital, but before the end of the thirtieth postoperative day.

Intent/Clarification: Operative Mortality includes:
(1) all deaths, regardless of cause, occurring during the hospitalization in which the operation was performed, even if after 30 days (including patients transferred to other acute care facilities)
(2) all deaths, regardless of cause, occurring after discharge from the hospital, but before the end of the thirtieth postoperative day.
(3) all patients discharged to Hospice. **Update August 2020 - A discharge to palliative care is an acknowledgement that the patient is not expected to survive. Therefore, a discharge to palliative care is equivalent to a discharge to hospice**

and should be regarded as a mortality unless the participant group provides proof otherwise.

SEQ. #: 7125
Long Name: Post Discharge Death Location
Short Name: PostDisDthLoc
Definition: Indicate the location where the patient died after being discharged from the original hospitalization.

Intent/Clarification:

- Home – Includes assisted living or temporarily, at the home of a relative.
- Extended Care Facility – Includes long-term acute care hospital (LTACH, LTAC, LTCH) and Nursing Home. Nursing Home is a residence where skilled care or acute care is not required. May include SNF if the intent of discharging to a SNF is for a higher level of care without the intent of discharging home.
- Hospice - Includes patients who are discharged to inpatient or outpatient hospice and home hospice. **Update August 2020 - A discharge to palliative care is an acknowledgement that the patient is not expected to survive. Therefore, a discharge to palliative care is equivalent to a discharge to hospice and should be regarded as a mortality unless the participant group provides proof otherwise.**
- Acute Rehabilitation - (Ultimate plan for patient to return home after a short-stay) Includes short-term inpatient and outpatient rehab facilities and Skilled Nursing Facilities (SNF) with skilled rehabilitative care services.
- Hospital during readmission
- Other – Includes prison or jail
- Unknown

Note: A patient died within thirty days of discharge. Cardiac arrest is documented in the ED. Code Other for this death location since technically the death occurred outside the hospital.

SEQ. #: 7126
Long Name: Mort-Primary Cause of Death
Short Name: MtCause
Definition: Indicate the PRIMARY cause of death, i.e. the first significant abnormal event which ultimately led to death.

Intent/Clarification: If the patient died due to multiple organ system failure, select the system that either was the initiator of the Multisystem Organ Failure (MSOF) or the primary cause of the patient's demise**.**

- Cardiac
- Neurologic
- Renal
- Vascular
- Infection
- Pulmonary
- Unknown

- Other

Readmission

SEQ. #: 7140
Long Name: Readmission
Short Name: Readmit
Definition: Indicate whether the patient was readmitted to the hospital within 30 days of discharge from hospitalization for this surgery. Code yes for inpatient admission to an acute care facility. Do not capture ED or outpatient visits or admission to a skilled facility or nursing home.

Intent/Clarification: Patients that are transferred to another acute care hospital should be followed until the time of discharge from that facility. That will be the discharge date you enter in the database. Readmission is captured for 30 days following the discharge from acute care.

This is not part of the composite score.

The intent is to capture inpatient readmissions to acute care and primary care facilities only where the patient **status is listed as "In-Patient".**

- Obtain information as close to ≤ 30 days from date of discharge as possible.
- It is understood that some readmissions are planned; these are still counted as readmissions.
- To code "Yes", readmissions do not need to be at same institution where the initial surgical procedure was done.
- Discharge and readmission to a psychiatric care facility, where the patient is considered an in-patient are to be considered as readmissions.
- Do not include Emergency Department visits or observation status visits unless the ED visits lead to status of in-patient.
- If a patient is readmitted to an in-patient rehabilitation hospital, code "No".
- If a patient is readmitted to an LTAC, code "No".
- Do not code transfers to higher level of care, this is considered an extension of the same acute care admission. If the patient was discharged to the "Acute Rehab" floor of the same hospital and then readmitted back as an in-patient back into a nursing floor, code "Yes" to admission as an inpatient is considered "Yes".
- To align with CMS, 30-day readmission should not be coded for patients who remain in observation units, no matter the duration.

On occasion a patient is readmitted twice within the 30-day time frame from the date of the procedure. This is a Yes/No question and does not ask how many times readmitted. Any time the patient is readmitted to a hospital ≤ 30 days from the date of discharge regardless if the readmission was planned or unplanned, related or unrelated. You code the first readmission only.

Note: A patient presented in the ED and had a cardiac arrest. The patient died in the ED. This is not considered a readmission. The death should be coded as death outside the hospital.

30 Day Mortality / 30 Day Readmission / 30 Day DSWI Infection Log – Data Managers need to keep some type of log to include verification source, date assessed, and status of mortality, readmit, and DSWI. For example, this can be done on an excel spreadsheet or a document attached to DCF such as John Doe - Surgery 1/1/20 - Discharge 1/5/20 - checked with MD office and checked Medical Record on 2/6/20 and alive with no infection or readmit.

SEQ. #: 7145
Long Name: Date of Readmission
Short Name: ReadmitDt
Definition: Indicate the date the patient was readmitted.

Intent/Clarification: Indicate the date the patient was readmitted with a status of In-patient. If the patient was admitted with the status of "Observation" but later changed to "In-patient" code the date the patient was changed to in-patient status.

Required date format: mm/dd/yyyy

SEQ. #: 7160
Long Name: Readmit Reason
Short Name: ReadmRsn
Definition: Indicate the primary reason that the patient was readmitted as an in-patient.

Intent/Clarification: The intent is to identify readmissions where conditions have a physiologic relationship to cardiothoracic surgery.

If the patient was readmitted multiple times, use the first readmission to code this section. Example: If the patient was readmitted twice, the first time with pneumonia and the second time with angina, code pneumonia.

If the patient is readmitted with multiple re-admit reasons, code the principal discharge diagnosis.

Readmit Reason must be completed if known.

- **Angina:** chest pain or discomfort often spreading to the shoulders, arms, and/or neck, caused by inadequate blood supply to the heart; stable or unstable.
- **Anticoagulant Complication** - **Pharmacological:** relates to a bleeding complication secondary to the administration of an anticoagulant, IIb/IIIa inhibitor or other platelet inhibitor, for example Plavix, Coumadin, Aggrastat etc. This is often diagnosed as sub-therapeutic or supra-therapeutic INR.
- **Anticoagulant Complications**- **Valvular:** relates to thrombus forming in, on and around the prosthetic valve.
- **Aortic Complication:** may relate to issues in the native aorta or be secondary to aortic procedures.
- **Arrhythmia / Heart Block**: Patient admitted due to rhythm irregularities that may have required pharmacological, non- invasive, or invasive treatment.
- **Blood Pressure**: (hyper or hypotension)
- **Chest Pain, non-cardiac**

- **Congestive Heart Failure**: May be manifested as pulmonary edema or only identified as “heart failure”. Must have a diagnosis of Congestive Heart Failure (CHF).
- **Coronary Artery/Graft Dysfunction**: This may include native vessels and/or conduit restenosis, spasm or dissection.
- **Depression/psychiatric issue**
- **DVT (Deep Venous Thrombosis**): The formation of a blood clot in the deep veins within the body, such as in the leg or pelvis diagnosed by ultrasound.
- **Electrolyte imbalance**
- **Endocarditis**: Confirmed diagnosis of endocarditis by blood culture and/or vegetation on or around a heart valve. This may include native tissue, ring or prosthetic valve involvement.
- **Failure to thrive:** Weight loss of more than 5%, decreased appetite, poor nutrition, and physical inactivity, often associated with dehydration, depression, immune dysfunction.
- **GI issue**: May require medical management, observational management or surgical intervention to control.
- **Infection- Conduit Harvest Site**: Use CDC definitions.
- **Infection- Deep Sternum / Mediastinitis:** Use CDC definitions. May or may not require surgical intervention.
- **Mental status changes:** Any other mental status change not diagnosed as Stroke or Transient Ischemic Attack
- **Myocardial Infarction**: MI diagnosis and/or angina diagnosed by the criteria listed in the definition. Prior to coding as MI, verify with discharge diagnosis to assure that the MI was ‘ruled in’ or that the patient’s reported angina was not secondary to chest wall pain, as diagnosed with echocardiography, chest x- ray, EKG, or other methods.
- **PE (Pulmonary Embolism**): Pulmonary embolisms must be documented through diagnostic testing such as VQ scan, angiogram, or CT. Do not confuse Pulmonary Embolism with Pulmonary Edema, captured under ‘Respiratory Complication, Other’.
- **Pericardial Effusion and/or Tamponade:** May or may not require invasive intervention on readmission i.e. re-exploration or pericardial tap.
- **Pericarditis/Post Cardiotomy Syndrome:** Inflammatory reaction involving the pericardium that may include fever, effusion, pain.
- **Pleural Effusion Requiring Intervention:** A pleural effusion is a buildup of fluid between the layers of tissue that line the lungs and chest cavity. Diagnosis is often made through imaging studies. Intervention may consist of Thoracentesis (often by Interventional Radiology), Chest tube, Pleural drain (including pleural catheter or pigtail catheter), or Pleural decortication. Intervention does not necessarily entail an OR visit. Many procedures are done at ICU bedside.
- **Pneumonia:** Pneumonia is an inflammation of the lungs, typically diagnosed by microbiology of sputum cultures. It can be detected by imaging studies but should have confirming evidence. Include aspiration pneumonia. Look for documentation in medical record notes.
- **Renal Failure**: Use “Failure” criteria highlighted in RIFLE criteria.
- **Renal Insufficiency**: dysfunction of the kidneys with accumulation of waste products in the blood.
- **Respiratory Complication, Other:** Include acute respiratory failure (often requiring emergent intubation or ECMO cannulation), hypoxemia, pulmonary edema, respiratory acidosis. Pneumonia is separately captured.
- **Sepsis:** See definition of sepsis in the post-operative events section.

- **Stroke:** Confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain that did not resolve within 24 hours.
- **TIA (Transient Ischemic Attack}:** Neurological dysfunction that lasts less than 24 hours and is completely resolved.
- **Transfusion**
- **Transplant Rejection:** There are two forms of acute rejection: cellular and vascular. The chances of acute cellular rejection are greatest during the first six months after transplant. Acute vascular rejection is a type of acute rejection that occurs early after transplant (within the first four months) in a small number of patients.
- **VAD Complication:** Any device failure or malfunction of a VAD. Some physiologic complications, such as hemorrhagic stroke, hemolysis, or GI bleeds can be related to VAD complications.
- **Valve Dysfunction:** Can be either structural (i.e. leaflet fracture, impaired leaflet function, calcification) or non- structural (paravalvular leak, hemolytic anemia, pannus obstruction) dysfunction. Is applicable to either a mechanical or tissue valve. Dysfunction related to endocarditis is captured separately.
- **Vascular Complication, Acute:** Any major arterial or venous circulatory compromise that requires pharmacological, non- invasive or invasive treatment to resolve, i.e. peripheral delivery of TPA, peripheral angioplasty. Include acute limb ischemia that may require fasciotomy or amputation for treatment. DVT (deep vein thrombosis) is captured separately.
- **Wound:** Other (drainage, cellulitis)
- **Wound, Sternal dehiscense not related to infection**
- **Other – Related Readmission:** Those conditions that may have a correlation to cardiothoracic surgery.
- **Other – Nonrelated Readmission:** All other reasons for admission, i.e., trauma, cancer, that are not related to the initial cardiac surgery or its complications.
- **Other – Planned Readmission:** Readmission for a procedure that was conditional upon surgical remediation of a cardiac condition. Example: A patient is re-admitted to the hospital after CABG for reasons that were planned prior to cardiac surgery (e.g. colon resection or kidney transplant).
- **Unknown:** Use this field selection only if there is no information available as to the reason why the patient returned. All effort should be made to identify the reason.

SEQ. #: 7165
Long Name: Readmit Reason - Primary Procedure
Short Name: ReadmPro
Definition: Indicate the primary procedure that the patient received after being readmitted as an in-patient.

Intent/Clarification: If the patient was readmitted multiple times, use the first readmission to code this section. Example: If the patient was readmitted twice and did not have any procedures on the first visit but had a Cath-lab intervention on the second visit, code No Procedure Performed.

If there are multiple readmit procedures performed, code the most invasive procedure.

- **No Procedure Performed**: There was no invasive or a non-invasive procedure performed. Patient may have been managed by medical observation, pharmacological or other medical therapies. Blood transfusions, ECGs, ordinary x-ray imaging, and IV infusions are not considered ‘procedures.
- **Cath Lab for Valve Intervention**: Examples would include the following: Valvuloplasty, TAVR, mitral clip and other related procedures.
- **Cath Lab for Coronary Intervention (PCI)**: Percutaneous coronary intervention, angioplasty, STENT or other coronary occlusive therapies in the Cath Lab.
- **Dialysis**: The patient required new hemo or peritoneal dialysis. May include CRRT.
- **OR for Bleeding**: Bleeding due to pericardial tamponade or related to a prior cardiac surgery. Includes repair of ventricular lacerations. (Note that OR visit is not an absolute requirement. Procedures done at ICU bedside to control mediastinal bleeding are included, as defined under Postoperative Event).
- **OR for Coronary Artery Intervention**: Any surgical intervention on any of the coronary arteries due to progressive native coronary disease, conduit spasm, occlusion or dissection.
- **OR for Sternal Debridement / Muscle Flap**: Any surgical intervention necessary to debride (clean or remove marginal tissue or muscle) or Plastic Surgeon involvement to perform muscle flap reconstruction for deep sternal wound infection.
- **OR for Valve Intervention**: Any surgical procedure performed (repair and/or replacement) on any heart valve; native, prosthetic or ring/band device.
- **OR for Vascular Procedure**: Any (arterial) vascular surgical procedure required. Examples would include but are not limited to femoral hematoma evacuation, PTA, AAA, Carotid Endarterectomy, Fem-Pop bypass etc.
- **OR for Aorta Intervention**: Includes open or endovascular intervention.
- **Pacemaker Insertion /AICD**: Permanent Pacemaker or Implantable Cardioverter Defibrillator for arrhythmia or heart block.
- **Pericardiotomy / Pericardiocentesis**: Pericardiotomy is removal of all or part of the pericardium. Pericardiocentesis is drainage of accumulated fluid from or around the heart that creates hemodynamic compromise for the patient. Pericardiocentesis is typically performed as a non- surgical intervention, but a more invasive approach can be achieved through the surgical procedure of pericardial window.
- **Planned non-cardiac procedure**: Example: planned colon resection
- **Thoracentesis / Chest Tube Insertion**: Thoracentesis is a procedure to remove fluid from the space between the lungs and the chest wall called the pleural space. It is done with a needle. For persistent fluid accumulation, a chest tube can be inserted for more long-term drainage.
- **Wound Vac:** Wound Vac therapy promotes surgical wound healing through Negative Pressure Wound Therapy (NPWT). By delivering negative pressure (a vacuum) at the wound site, this helps draw wound edges together, remove infectious materials and actively promote granulation.
- **Other Procedure**: Some type of invasive or non-invasive procedure was performed that is not included in the above referenced list.
- **Unknown**: Use this field selection only if there is no information available as to the treatment/intervention prescribed. All effort should be made to identify the treatment used.

FAQ August 2020 - If a patient is readmitted and an MRI with or without contrast is performed is this considered an "Other Procedure"?

Answer - No, "Other" procedure for SEQ 7165 does not include diagnostic procedures and is defined as an invasive procedure with intent to treat. For example, patient is readmitted and an EGD with cauterization is performed for GI bleeding. This is to be captured as "other procedure' In SEQ 7165.

SEQ. #: 7166
Long Name: Readmit Reason - Primary Procedure - Aorta Intervention Type
Short Name: ReadmAortIntTy
Definition: Indicate the type of aortic intervention required during readmission.

Intent/Clarification: Indicate if the patient requires an open or endovascular aorta procedure.

SEQ. #: 7167
Long Name: Readmit Reason - Primary Procedure - Aorta Intervention Indication
Short Name: ReadmAortIntInd
Definition: Select the indication for aortic re-intervention.

Intent/Clarification: Indications for an aorta re-intervention procedure include:

- Rupture
- Endoleak
- Infection
- Dissection
- Expansion
- Loss of side branch patency
- Other

Risk Scores

SEQ. #: 7170
Long Name: Predicted Risk of Mortality
Short Name: PredMort
Definition: Indicate the Predicted Risk of Mortality.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7175
Long Name: Predicted Deep Sternal Wound Infx
Short Name: PredDeep
Definition: Indicate the Predicted Risk of Deep Sternal Wound Infection.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7180
Long Name: Predicted Reoperation
Short Name: PredReop
Definition: Indicate the Predicted Risk of Reoperation.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7185
Long Name: Predicted Permanent Stroke
Short Name: PredStro
Definition: Indicate the Predicted Risk of Permanent Stroke.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7190
Long Name: Predicted Prolonged Ventilation
Short Name: PredVent
Definition: Indicate the Predicted Risk of Prolonged Ventilation.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7195
Long Name: Predicted Renal Failure
Short Name: PredRenF
Definition: Indicate the Predicted Risk of Renal Failure.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7200
Long Name: Predicted Morbidity or Mortality
Short Name: PredMM
Definition: Indicate the Predicted Risk of Morbidity or Mortality.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7205
Long Name: Predicted Short Length of Stay
Short Name: Pred6D
Definition: Indicate the Predicted Risk of Short Length of Stay.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

SEQ. #: 7210
Long Name: Predicted Long Length of Stay
Short Name: Pred14D
Definition: Indicate the Predicted Risk of Long Length of Stay.

Intent/Clarification: The prediction of risk is calculated within the software according to a model specified to the vendor. **No user data input is accepted.**

STS Temporary Fields

STS Temporary fields should only be used at the direction of STS. Do not use for local data collection and clear any data that may have been entered prior to submission.

SEQ. #: 7215
Long Name: Temporary Yes/No Field #1
Short Name: TempYN1
Definition: The patient had a planned and consented Impella implantation using an open surgical approach (transaxillary or transaortic) during the index cardiac procedure.

Intent/Clarification:

- Yes
- No

Planned implantation: Entails documentation of preoperative discussions and preoperative consent, including the indications and rationale for device implantation with the patient and the care team. For non-urgent scenarios, it is expected that the patients will undergo a comprehensive evaluation by a multidisciplinary team for advanced heart failure therapies including candidacy for **short-term** or long-term VAD support or cardiac transplantation. Myocardial viability testing and invasive right heart hemodynamic measurements are typically performed as part of the preoperative work-up.

The indication for the **planned** temporary VAD insertion include **a low EF (< 25%) and a minimum of two of the following**

- Acute or acute on chronic heart failure requiring **preoperative** inotropic or mechanical support
- A cardiac index of <2.0L/min/m^2
- Poor coronary targets (documented by 2 surgeons)

- **Documentation of agreement by at least 1 surgeon and 1 member of the multidisciplinary team that may include a heart failure cardiologist**

Surgical implantation: Entails an open approach with a **transaxillary** or a **transaortic insertion of a device that can deliver a minimum of 5.0 L of flow** performed in the operating room in combination with other cardiac procedures. **A percutaneously implanted device is excluded from this category.**

Intraoperatively: In the operating room at the time of the combined (index) cardiac procedure. Surgically implanted temporary VAD insertion performed as a separate procedure after an index cardiac operation is excluded from this category.

SEQ. #: 7220
Long Name: Temporary Yes/No Field #2
Short Name: TempYN2
Definition: This is a temporary field that should not be used for data collection until expressly instructed to by the STS.

Intent/Clarification: Use only as directed by STS, do not add custom field here.

SEQ. #: 7225
Long Name: Temporary Date Field
Short Name: TempDt
Definition: This is a temporary field that should not be used for data collection until expressly instructed to by the STS.

Intent/Clarification: To further understand the impact of COVID-19 on surgical patients, STS will collect the date of positive PCR testing for COVID-19 patients. If there is more than one positive test date, collect the date that is closest to the OR date. **Positive antibody testing is not captured in this field**. To achieve this, the temporary field (TempDt) will be utilized for patients who have a confirmed COVID-19 diagnosis through PCR testing.

FAQ July 2020 - It is documented that my patient had a positive COVID-19 test in April 2020. What date do I enter into the database when I only have the month and year of the positive COVID-19 test?
Answer - If month and year are known code month/01/year. If only the year is known code 01/01/Year. Leave Blank if you have no information on the month, day, or year of the test.

FAQ August 2020 - Patient had documented positive Covid 19 PCR in month before surgery. Covid negative x 2 in hospital before surgery. Post op course uneventful. Patient readmitted within 30 days post discharge and Covid test positive again. What positive date should I code in SEQ 7225?
Answer - Code the positive test date closest to surgery in this scenario.

SEQ. #: 7230
Long Name: Temporary Coded Field

Short Name: TempCode
Definition: This is a temporary field that should not be used for data collection until expressly instructed to by the STS.

Intent/Clarification: Did the patient have a laboratory confirmed diagnosis of COVID-19?

- No (Harvest Code 10)
- Yes, prior to hospitalization for this surgery (Harvesty Code 11)
- Yes, in hospital prior to surgery (Harvest Code 12)
- Yes, in hospital after surgery (Harvest Code 13)
- Yes, after discharge within 30 days of surgery (Harvest Code 14)

Positive antibody testing is not captured. There are many tests for different types of coronavirus. **The one that causes COVID-19 is SARS-CoV-2.** Human Coronaviruses types:

- 229E (alpha coronavirus)
- NL63 (alpha coronavirus)
- OC43 (beta coronavirus)
- HKU1 (beta coronavirus)
- MERS-CoV (the beta coronavirus that causes Middle East Respiratory Syndrome, or MERS)
- SARS-CoV (the beta coronavirus that causes severe acute respiratory syndrome, or SARS)
- SARS-CoV-2 (the novel coronavirus that causes coronavirus disease 2019, or COVID19)

Note: During a follow up phone call, a patient says that they tested positive for COVID-19. In this scenario, code Yes, after discharge within 30 days of surgery for patients who self report testing positive for COVID-19 within 30 days of surgery.

Note: For Temporary Code 11 Yes, prior to hospitalization for this surgery. There is no timeframe for Temporary Code 11. Capture any COVID 19 positive test pre-op and enter the date in SEQ 7225 TempDt.

Note: Temporary Code 10 NO applies to any of the above timeframe's pre-op, during hospitalization, and post-op. For example, if the patient tested negative or was not tested pre-op, then code as NO. If the patient is then tested and is negative or not tested during the hospitalization, code NO. If the patient is discharged and is found to be COVID 19 positive within 30 days of surgery, remove code 10 and code Yes to Code 14.

Update July 2020 - The nasal swab/OP swab, lower resp (RNA) test is the test that we are looking for. The IgG is the antibody test, this is not the test we are looking for.

INFECTIOUS DISEASES	05/27/2020 9:49 MST
VIRAL DIRECT DETECTION	
COVID-19 Patient Symptomatic?	No
Source (NP Swab, OP Swab, Lower Resp)	Nasopharyngeal Sv
Coronavirus (COVID-19) SARS-CoV-2 RNA	Not Detected *
Coronavirus (COVID-19) SARS-CoV-2 IgG	Negative *

SEQ. #: 7235
Long Name: Temporary Text Field
Short Name: TempText
Definition: This is a temporary field that should not be used for data collection until expressly instructed to by the STS.

Intent/Clarification: Use only as directed by STS, do not add custom field here.

Adult Cardiac Anesthesiology

SEQ. #: 7300
Long Name: Organization Participates in Adult Anesthesia Section
Short Name: OrgPartAdAnesthSect
Definition: Indicate if your organization participate in the Adult Anesthesia Section.

Intent/Clarification:

- Yes
- No

SEQ. #: 7310
Long Name: Primary Anesthesiologist Name
Short Name: PrimAnesName
Definition: Indicate the full name of the primary anesthesiologist for the procedure.

Intent/Clarification: Field must be populated. Missing data or information for an anesthesiologist not on your current contract with the STS will cause your data file submission not to process.

Note: If during a case, the primary anesthesiologist changes (i.e. one relieves another one to finish the case), the primary anesthesiologist will be coded as the anesthesiologist that started the procedure.

SEQ. #: 7315
Long Name: Primary Anesthesiologist National Provider Identifier
Short Name: PrimAnesNPI

Definition: Indicate the individual-level National Provider Identifier (NPI) of the primary anesthesiologist for the procedure.

Intent/Clarification: Field must be populated. Missing or inaccurate data will cause your data file submission not to process. It is crucial to enter the correct anesthesiologist identifier.

SEQ. #: 7320
Long Name: Care Team Model
Short Name: AnesCareTeamMod
Definition: Indicate the anesthesia care team assigned for the predominant portion of the procedure, defined as greater than 40% of the duration of the procedure from induction of anesthesia to the patient intraoperatively.

Intent/Clarification: Determine the care model primarily responsible for providing anesthesia to the patient intraoperatively. This information can be found on the anesthesia record. Check with your anesthesia team or leave blank if the data is not available.

- Anesthesiologist working alone
- Attending anesthesiologist teaching/medically directing fellow
- Attending anesthesiologist teaching/medically directing house staff
- Attending anesthesiologist medically directing CRNA
- Attending anesthesiologist medically directing AA (~~Attending anesthesiologist~~ **Update Oct 2020 Anesthesiologist Assistant**)
- Surgeon medically directing CRNA
- CRNA practicing independently

FAQ September 2020 – How should I code an Attending Anesthesiologist medically directing anesthesia PA?
Answer - Code as Attending Anesthesiologist medically directing CRNA.

SEQ. #: 7321
Long Name: Anesthesiology Care Team Model - Anesthesiologist Directing CRNA Ratio
Short Name: AnesCareTeamModCRNARatio
Definition: Indicate the ratio of the attending anesthesiologist medically directed CRNA.

Intent/Clarification: Data Managers work with their Anesthesia Providers to document this type of information into a Protocol/Guide to have for auditing purposes.

- 1:1
- 1:2
- 1:3
- 1:4
- 1:5
- N/A

SEQ. #: 7322
Long Name: Anesthesiology Care Team Model - Anesthesiologist Directing AA Ratio

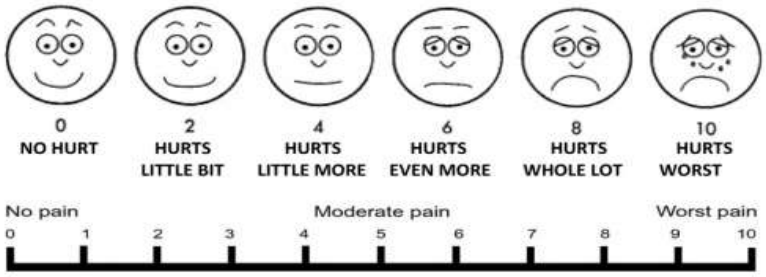
Short Name: AnesCareTeamModAARatio
Definition: Indicate the ratio of the attending anesthesiologist medically directed AA.

Intent/Clarification: Data Managers work with their Anesthesia Providers to document this type of information into a Protocol/Guide to have for auditing purposes

- 1:1
- 1:2
- 1:3
- 1:4
- 1:5
- N/A

SEQ. #: 7325
Long Name: Pain Score Baseline
Short Name: PainScorePre
Definition: Indicate the highest baseline (preoperative) pain score on the 0-10 integer scale, or indicate that the score was not recorded.

Intent/Clarification: Pain score, which is a quality metric, is routinely assessed as part of preoperative holding area check in list. This information should be obtainable from a progress note or similar documentation completed by preoperative nurse closest to the OR Entry time.



SEQ. #: 7326
Long Name: Blood Pressure Baseline (Pre-Anesthetic Induction) - Systolic
Short Name: PreAnesthBPSys
Definition: Indicate the most representative preoperative systolic blood pressure After OR entry closest to, but prior to induction of anesthesia.

Intent/Clarification: Record the systolic blood pressure closest to, but prior to induction of anesthesia that is most representative of the patient's preoperative status. The most representative initial blood pressure (systolic) should be recorded. This number may be an initial single recording or the average or median of a series of BP determinations. In all cases, the values should be recorded in the operating room prior to the induction of anesthesia.

Note: If the blood pressure closest to induction is debatably abnormal for the patient (erroneously high or low), then a median of the first five (5) blood pressures measurements by the automated record keeping system obtained after OR Entry may be used.

If this information is not available, leave blank.

SEQ. #: 7327
Long Name: Blood Pressure Baseline (Pre-Anesthetic Induction) - Diastolic
Short Name: PreAnesthBPDia
Definition: Indicate the most representative preoperative diastolic blood pressure after OR entry closest to, but prior to induction of anesthesia.

Intent/Clarification: Record the diastolic blood pressure closest to, but prior to induction of anesthesia that is most representative of the patient's preoperative status. The most representative initial blood pressure (diastolic) should be recorded. This number may be an initial single recording or the average or median of a series of BP determinations. In all cases, the values should be recorded in the operating room prior to the induction of anesthesia.

Note: If the blood pressure closes to induction is debatably abnormal for the patient, then a median of blood pressures obtained after OR Entry may be used. If the blood pressure closes to induction is debatably abnormal for the patient (erroneously high or low), then a median of the first five (5) blood pressures measurements by the automated record keeping system obtained after OR Entry may be used.

If this information is not available, leave blank.

SEQ. #: 7328
Long Name: Heart Rate Baseline (Pre-Anesthetic Induction)
Short Name: PreAnesthHR
Definition: Indicate the most representative preoperative heart rate after OR entry closest to, but prior to induction of anesthesia.

Intent/Clarification: Record the heart rate closest to, but prior to induction of anesthesia, that is most representative of the patient's preoperative status. The most representative initial heart rate should be recorded. This number may be an initial single recording or the average or median of a series of heart rate determinations. In all cases, the values should be recorded in the operating room prior to the induction of anesthesia. The source of heart rate should derive from the ECG monitor since pulse rates derived from pulse oximetry/plethysmography or arterial tracings may underestimate the heart rate in tachyarrhythmias and other circumstances. If the heart rate closest to induction is debatably abnormal for the patient, then a median of five (5) heart rates obtained after OR Entry may be used.

If no heart rate is available, leave blank.

SEQ. #: 7329
Long Name: Pulmonary Artery Catheter Used
Short Name: PACIntra
Definition: Indicate the preoperative or intraoperative placement of a pulmonary artery catheter. Placement of a pulmonary artery catheter (PAC) in the preoperative or intraoperative period and use of this catheter during the intraoperative period.

Intent/Clarification: Identify if a pulmonary artery catheter (PAC or Swan-Ganz type catheter) was placed pre- or intra-operatively and used during the intraoperative period.

SEQ. #: 7330
Long Name: Transfusion Algorithm to Guide Transfusion
Short Name: TransfAlg
Definition: Indicate whether a transfusion algorithm or guideline was used to guide transfusion in the patient.

Intent/Clarification: A transfusion algorithm or guideline is a predetermined set of treatment plans specific to various patient specific criteria to aid in transfusing the patient. Check with your anesthesia team or leave blank if the data is not available. In the event of an audit, have the protocol/guide available for auditors.

SEQ. #: 7335
Long Name: Heparin Prior to CPB
Short Name: HepPriorCPB
Definition: Indicate if heparin that was administered by anesthesia after OR Entry but prior to the initiation of first cardiopulmonary bypass**.**

Intent/Clarification: Capture only heparin given by anesthesia prior to initiation of CPB.

- Yes
- No

FAQ September 2020- Do we capture heparin administered by anesthesia that is given during an off-pump case.
Answer – Yes, capture any heparin given by anesthesia during surgery.

SEQ. #: 7340
Long Name: Heparin Total Dose
Short Name: TotHep
Definition: Indicate the total dose of heparin that was administered by anesthesia after OR Entry but prior to the initiation of first cardiopulmonary bypass. Include all doses of heparin given prior to the first cardiopulmonary bypass. Value should be recorded in units.

Intent/Clarification: Capture only heparin given by anesthesia prior to initiation of CPB.

SEQ. #: 7345
Long Name: Heparin Management
Short Name: HepMgmt
Definition: Indicate the method of heparin management used intraoperatively prior to CPB. Different approaches are utilized to measure the adequacy of heparinization for anticoagulation.

Intent/Clarification: The adequacy of heparinization determines the coaguability of the patient's blood.

- Heparin titration based on activated clotting time (ACT) - Heparin titration based on activated clotting time (ACT) measures how quickly the blood will clot. The larger the number the longer it will take for the blood to clot.

- Heparin titration based on heparin concentration (e.g. Hepcon system) - Heparin titration based on heparin concentration (Hepcon System) measures the concentration of heparin in the blood.

- Other method - If either of these two measurements are not used to determine the level of heparinization then "other" should be chosen.

SEQ. #: 7346
Long Name: Fresh Frozen Plasma prior to CPB
Short Name: FFPPriorCPB
Definition: Indicate if the patient received fresh frozen plasma intra-operatively after heparin was given but prior to cardiopulmonary bypass.

Intent/Clarification: Timeframe from first heparin bolus administered intra-operatively by anesthesia and prior to cardiopulmonary bypass.

SEQ. #: 7347
Long Name: Fresh Frozen Plasma prior to CPB – Total Dose
Short Name: FFPPriorCPBUnits
Definition: Indicate if the patient received fresh frozen plasma intra-operatively after heparin was given but prior to cardiopulmonary bypass.

Intent/Clarification: Indicate the total number of units of Fresh Frozen Plasma given intra-operatively between anesthesia administered first heparin bolus and commencement of CPB.

SEQ. #: 7348
Long Name: Antithrombin III prior to CPB
Short Name: AntithromPriorCPB
Definition: Indicate if the patient received Antithrombin III intra-operatively after heparin was given but prior to cardiopulmonary bypass

Intent/Clarification: Antithrombin III is a medication given to enhance the heparin effect to achieve adequate anticoagulation. Timeframe from first heparin bolus administered intra-operatively by anesthesia and prior to cardiopulmonary bypass.

SEQ. #: 7351
Long Name: Antithrombin III – Total Dose
Short Name: AntithromDose

Definition: Indicate the total dose of antithrombin III given between anesthesia administered first heparin bolus and commencement of CPB.

Intent/Clarification: Capture Antithrombin administered intra-operatively prior to initiation of CPB**.**

SEQ. #: 7352
Long Name: Bivalirudin
Short Name: AnticoagPriorCPBBival
Definition: Indicate if bivalirudin was given intra-operatively prior to cardiopulmonary bypass.

Intent/Clarification: Bivalirudin (Angiomax or Angiox) is a direct thrombin inhibitor (DTI) that helps prevent the formation of blood clots. Capture bivalirudin administered intra-operatively by anesthesia prior to initiation of CPB. Code Yes for patients who enter the OR on an IV bivalirudin drip.

SEQ. #: 7353
Long Name: Argatroban
Short Name: AnticoagPriorCPBArg
Definition: Indicate if argatroban was given intra-operatively prior to cardiopulmonary bypass.

Intent/Clarification: Argatroban is an anticoagulant that is a small molecule direct thrombin inhibitor. Capture argatroban administered intra-operatively by anesthesia prior to initiation of CPB. Code Yes for patients who enter the OR on an IV argatroban drip.

SEQ. #: 7360
Long Name: Viscoelastic Testing Used During Operation
Short Name: IntraViscoTest
Definition: Indicate whether viscoelastic testing was used intraoperatively (example: TEG and ROTEM). Thromboelastography (TEG) is a method of testing the efficiency of coagulation in the blood.

Intent/Clarification: Viscoelastic testing (example: TEG, TEG-FF, or ROTEM) is used to determine which coagulation products to administer when the patient has an anticipated coagulopathy or non-surgical cause of bleeding. CT anesthesia team or patient’s lab record may be useful to see whether any of the above indicated viscoelastic tests has been performed.

SEQ. #: 7365
Long Name: Volatile Agent Used
Short Name: VolAgentUsed
Definition: Indicate whether a volatile agent was used.

Intent/Clarification: A volatile anesthetic is an inhaled anesthetic administered via an anesthetic gas machine or via the cardiopulmonary bypass machine.

SEQ. #: 7370
Long Name: Volatile Agent(s) Used - Type
Short Name: VolatileAgentUsedTy
Definition: Indicate the type of volatile agent used intra-operatively. If more than one agent was used, select all that apply.

Intent/Clarification: Information may be obtained from anesthesia record or perfusion record.

- Isoflurane - Indicate if isoflurane was the volatile anesthetic used to provide anesthesia.
- Desflurane - Indicate if desflurane was the volatile anesthetic used to provide anesthesia.
- Sevoflurane - Indicate if sevoflurane the volatile anesthetic used to provide anesthesia.
- Other - Although highly unlikely, indicate if any other volatile agents were used to provide anesthesia.

SEQ. #: 7377
Long Name: Volatile Agent(s) Timing
Short Name: VolAgentTiming
Definition: Indicate the timing of the administration of the volatile agent. If a volatile agent was administered at different time, select all that apply.

Intent/Clarification: Time frame of administering a volatile agent is after OR entry and prior to CPB initiation. This information will either come from intraoperative anesthesia record or perfusion record. Leave blank if the information is unavailable.

- Pre CPB - Indicate whether the volatile agent was used prior to the patient being on CPB.
- During CPB - Indicate whether the volatile agent was used during the period when patient was on CPB.
- Post CPB - Indicate whether the volatile agent was used after the patient was taken off CPB and prior to admission to the ICU.
- Maintenance (if no CPB) - Indicate whether a volatile agent was used for maintenance in a non-pump case (no CPB) after entry into the OR and prior to admission to ICU.

SEQ. #: 7398
Long Name: Intraop Midazolam
Short Name: IntraopMidaz
Definition: Indicate if midazolam was administered from OR Entry to OR Exit.

Intent/Clarification: When midazolam is used there is an increased risk for postop delirium. **The intent of this field is to capture if midazolam is given within 1 hour of entering the OR for surgery or given during surgery**.

- Yes
- No

SEQ. #: 7400
Long Name: Intraop Mgs of Midazolam - Dose
Short Name: MidazIntra
Definition: Indicate the interoperative dose of midazolam in milligrams administered after OR entry and prior to OR exit. Enter zero if no midazolam used.

Intent/Clarification: The intent of this field is to capture if midazolam is given within 1 hour of entering the OR for surgery or given during surgery. Record in milligrams the total amount of midazolam administered within 1 hour of entering the OR for surgery or given during surgery. Record “0 mg” if no midazolam was administered intraoperatively.

SEQ. #: 7402
Long Name: Intraop Fentanyl
Short Name: IntraopFent
Definition: Indicate if fentanyl was administered from OR Entry to OR Exit.

Intent/Clarification:

- Yes
- No

SEQ. #: 7404
Long Name: Intraop Fentanyl - Dose
Short Name: IntraFentDose
Definition: Indicate the total dose of fentanly administered in micrograms (mcgs) from OR Entry to OR Exit

Intent/Clarification: Record in in micrograms (mcgs) the amount of fentanyl administered after OR Entry and prior to OR Exit. Record “0 mcg” if no fentanyl was administered intraoperatively.

SEQ. #: 7406
Long Name: Intraop Sufentanil
Short Name: IntraopSufent
Definition: Indicate if sufentanil was administered from OR Entry to OR Exit.

Intent/Clarification:

- Yes
- No

SEQ. #: 7408

Long Name: Intraop Sufentanil Dose
Short Name: IntraSufentDose
Definition: Indicate the total dose of sufentanil administered in micrograms (mcgs) from OR Entry to OR Exit

Intent/Clarification: Record in in micrograms (mcgs) the amount of sufentanil administered after OR Entry and prior to OR Exit. Record “0 mcg” if no sufentanil was administered intraoperatively.

SEQ. #: 7410
Long Name: Intraop Reminfentinal
Short Name: IntraopRemifent
Definition: Indicate if reminfentinal was administered from OR Entry to OR Exit.

Intent/Clarification:

- Yes
- No

SEQ. #: 7412
Long Name: Intraop Reminfentinal Dose
Short Name: IntraRemifentDose
Definition: Indicate the total dose of reminfentinal administered in micrograms (mcgs) from OR Entry to OR Exit

Intent/Clarification: Record in in micrograms (mcgs) the amount of reminfentinal administered after OR Entry and prior to OR Exit. Record “0 mcg” if no reminfentinal lwas administered intraoperatively.

SEQ. #: 7413
Long Name: Multimodal Analgesics Given (OR Entry to 24h post OR exit)
Short Name: MultimodAnalgesGiven
Definition: Indicate whether multimodal analgesics were given to the patient from OR Entry to 24 hours post OR Exit.

Intent/Clarification:

- Yes
- No

SEQ. #: 7414
Long Name: Multimodal Analgesics (OR Entry to 24h post OR exit)
Short Name: MultimodAnalges
Definition: Indicate the type of multimodal analgesics the patient received from OR Entry to 24 hours post OR Exit. If multiple multimodal analgesics were given, select all that apply.

Intent/Clarification:

- Ketamine (IV)
- Local/Regional Anesthesia to include regional / spinal blocks

- Lidocaine Infusion (not bolus)
- Acetaminophen (IV or PO)
- Cox-2 inhibitor/non-steroidal anti-inflammatory (PO) - Also known as selective COX-2 inhibitors, these medications treat inflammatory pain. Selective COX-2 inhibitors are a type of nonsteroidal anti-inflammatory medication (also known as NSAIDs). Includes Ketorolac (Toradol), ibuprofen, and naproxen. Celecoxib is the only selective COX-2 inhibitor available in the United States. Arcoxia (etoricoxib) is available in many countries, but not in the United States.
- Dexmedetomidine (IV)

SEQ. #: 7435
Long Name: Core Temperature Source In OR
Short Name: CoreTempSrc
Definition: Indicate the source of core temperature data used to guide cooling and/or rewarming during cardiac surgery.

Intent/Clarification: The intent is to capture the core temperature source that is used to by Anesthesia during cardiac surgery. Priority source for this field is the temperature documented on the Anesthesia record. If the temperature source is not documented on the Anesthesia record, then code as unknown.

Core temperature can be accurately monitored using Esophageal, Nasopharyngeal, bladder, rectal, and pulmonary artery catheter thermistor methods. It is encouraged that sites will choose one of these sources as their priority source. Tympanic methods are available, however not as accurate.

- Esophageal
- Bladder
- Nasopharyngeal
- Pulmonary artery catheter thermistor
- Tympanic
- Rectal
- CPB venous return
- Jugular-Venous
- Oxygenator arterial outlet blood (CPB Arterial Blood)
- Other
- Unknown

SEQ. #: 7440
Long Name: Core Temperature Maximum During Rewarming
Short Name: CoreTempMax
Definition: Indicate the patient's highest core temperature after the initiation of CPB in degrees centigrade. If CPB is not used then code the highest core temp after Incision start time.

Intent/Clarification: The intent is to capture the core temperature that is used to by Anesthesia during cardiac surgery. Priority source for this field is the core temperature documented on the Anesthesia record.

SEQ. #: 7448
Long Name: Crystalloid given by Anesthesia
Short Name: CrystGivenAnesth
Definition: Indicate if intravenous crystalloid was administered by the anesthesia care team intraoperatively.

Intent/Clarification: Indicate if crystalloid fluids were administered in the OR by the anesthesia care team. **This does not include fluid administered by perfusion**.

- Yes
- No

SEQ. #: 7450
Long Name: Total Crystalloid Administered by Anesthesia Care Team
Short Name: TotCrystAnesth
Definition: Indicate the total volume of intravenous crystalloid administered by the anesthesia care team in the OR. The data should be recorded in milliliters. Enter zero if no crystalloid used. Do not record any blood products in this data field.

Intent/Clarification:

SEQ. #: 7451
Long Name: Crystalloid given by Anesthesia - Type
Short Name: CrystGivenAnesthTy
Definition: Indicate the type of crystalloid fluid given by Anesthesia.

Intent/Clarification: If another type of crystalloid is given, then Code Yes to SEQ 7448 Crystalloid given by Anesthesia and enter the amount in SEQ 7451 Total Crystalloid Administered by Anesthesia Care Team and leave this field blank.

- 0.9 Sodium Chloride
- Normosol
- Ringer's Lactate
- Plasmalyte

FAQ August 2020 - Our facility is using Isolyte which is not on the list of crystalloids in the DCF. How should this be captured for SEQ 7451?
Answer - In this scenario, code SEQ 7448 as “Yes” and the amount given in SEQ 7450. Leave the type blank in SEQ 7451.

SEQ. #: 7452
Long Name: Five Percent Albumin Given by Anesthesia
Short Name: AlbAnesth5Pct
Definition: Indicate if 5% Albumin was given by Anesthesia intra-operatively. Only include fluid administered by Anesthesia.

Intent/Clarification: Indicate if 5% Albumin was administered in the OR by the anesthesia care team. **This does not include 5% albumin administered by perfusion**. Do not record any blood products in this data field.

- Yes
- No

SEQ. #: 7453
Long Name: Anesthesiology Total 5 % Albumin
Short Name: AnesthTot5PctAlb
Definition: Indicate the total amount of 5% Albumin administered by Anesthesia in milliters (mL).

Intent/Clarification:

SEQ. #: 7454
Long Name: Twenty-five Percent Albumin Given by Anesthesia
Short Name: AlbAnesth25Pct
Definition: Indicate if 25% Albumin was given by Anesthesia intra-operatively. Only include fluid administered by Anesthesia.

Intent/Clarification: Indicate if 25% Albumin was administered in the OR by the anesthesia care team. **This does not include 25% albumin administered by perfusion**. Do not record any blood products in this data field.

- Yes
- No

SEQ. #: 7455
Long Name: Anesthesiology Total 25% Albumin
Short Name: AnesthTot25PctAlb
Definition: Indicate the total amount of 25% Albumin administered by Anesthesia in milliters (mL).

Intent/Clarification:

SEQ. #: 7456
Long Name: Autologous Normovolemic Hemodilution (ANH)
Short Name: ANH
Definition: Indicate if Autologous Normovolemic Hemodilution (ANH) was administered by anesthesia intraopertively.

Intent/Clarification: Indicate if Autologous Normovolemic Hemodilution (ANH) was performed intraopertively. Acute Normovolemic Hemodilution **(**ANH**)** also known as “isovolemic hemodilution**,”** is a method of blood conservation used to reduce the amount of donor blood transfused. It involves removing blood from appropriate patients immediately after the induction of anesthesia**,** replacing the volume lost with colloids or crystalloids, then storing and returning this blood to the patient at the completion of the surgical procedures.

The intent is to capture whether blood was taken off the patient with the intent to return the blood back to the patient.

- Yes
- No

SEQ. #: 7457
Long Name: Autologous Normovolemic Hemodilution (ANH) Volume
Short Name: ANHVol
Definition: Indicate the total volume of Autologous Normovolemic Hemodilution (ANH) administered in milliliters (mL).

Intent/Clarification: If the patient had Autologous Normovolemic Hemodilution (ANH) enter the amount of blood given back to the patient. Can enter zero if none given back.

SEQ. #: 7462
Long Name: Inhaled Vasodilator
Short Name: InhalVaso
Definition: Indicate if inhaled vasodilators were administered intra-operatively.

Intent/Clarification: The intent of this field is to capture **if inhaled pulmonary vasodilators** were used intraoperatively after OR Entry but prior to OR Exit.

The most common inhaled pulmonary vasodilator is Inhaled nitric oxide (INO or NO). Other agents include inhaled prostacyclin to include epoprostenol sodium, iloprost, and treprostinil.

The Nitric Oxide (INO or NO) machine is kept separate from the anesthesia machine and is often recoded by the Respiratory Therapist. The information is most likely found on the Respiratory Therapist record if not on the anesthesia record.

SEQ. #: 7463
Long Name: Intraop IV Vasodilators used
Short Name: VasodilIntraop
Definition: Indicate the usage of intravenous vasodilating drugs administered by continuous infusion during the intraoperative phase of cardiac surgery.

Intent/Clarification: The intent of this field is to capture if **IV pulmonary vasodilators** were used intraoperatively after OR Entry but prior to OR Exit. Indicate if the patient received continuous infusion of vasodilating drugs intraoperatively. Do not include a one-time dose.

IV pulmonary vasodilators include milrinone, prostacyclin to include epoprostenol sodium, iloprost, and Treprostinil, and IV Sildenafil (Viagra).

SEQ. #: 7464
Long Name: Intraop Glucose Trough
Short Name: GlucTroughIntraop

Definition: Indicate if an intra-op glucose trough was performed from OR Entry to OR Exit.

Intent/Clarification: Indicate if an intraoperative glucose level in mg/dL was obtained after induction of anesthesia and prior to OR Exit time.

- Yes
- No

SEQ. #: 7465
Long Name: Intraoperative Glucose Trough Value
Short Name: GlucTroughIntraop
Definition: Indicate the patient's lowest intraoperative glucose in mg/dl after induction of anesthesia and prior to OR exit.

Intent/Clarification: Intraoperative glucose values vary widely in cardiac surgery. Administration of glucose containing fluids, stress, insulin, and glucocorticoids may all affect intraoperative glycemic levels.

SEQ. #: 7473
Long Name: Intraop Insulin
Short Name: IntraInsul
Definition: Indicate if intra-op insulin was administered from OR Entry to OR Exit.

Intent/Clarification: This includes bolus and infusion doses.

- Yes
- No

SEQ. #: 7474
Long Name: Intraop Insulin Total Dose (max units)
Short Name: TotInsuIntra
Definition: Indicate the total units (bolus and infusion) of insulin administered intraoperatively after OR entry and prior to OR exit. Enter zero if no insulin was given.

Intent/Clarification:

SEQ. #: 7476
Long Name: Intraoperative Processed EEG (BIS)
Short Name: IntraProcEEG
Definition: Indicate whether an intraoperative processed EEG was monitored.

Intent/Clarification: Indicate if a processed electroencephalogram (EEG) was utilized intraoperatively regardless if it was a Bispectral index (BIS) or other similar device.

- Yes
- No

General Concepts for ECHO in the Anesthesia Module

General Concepts for Ejection Fraction (EF)

If a percentage range is reported, report a whole number using the “mean”. For example, a range of 55-60 is coded as 58%.

If you have a 3D mode, it will take precedence over the 2D or M mode. If you have a 2D mode and M mode, the 2D mode will take precedence over the M mode.

If there are multiple values for the EF within the echo such as Under the Left Ventricle the EF is 35% and Under Impression LVEF 35-40%, use the value on the final impression / conclusion / summary from the reading physician.

If multiple methods of measurement of EF occur within in the same final impression / conclusion / summary on the echo report, use the following: The priority source for EF is as follows:

- 3D calculated EFs
- Simpsons or biplane calculated EF
- 2D calculated EF
- Visual EF

https://www.asecho.org/wp-content/uploads/2015/01/ChamberQuantification2015.pdf

For echo reports that have a descriptive term such as normal documented in the impression / conclusion / summary for EF and the measurement portion of the report says 60-70% by visual estimate, use the numerical values first and capture as 65%. Use descriptive terms when you have no numerical values.

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

General Concepts Valve Disease and Regurgitation

If valve regurgitation is dictated from echocardiogram as "NO SIGNIFICANT REGURGITATION", code none.

If the Echo indicates that the native valve has physiological insufficiency, code as No insufficiency.

For echo’s that provide insufficiency in terms of +1, +2, +3, and +4, you cannot assume that +1 equals trace etc... Please work with your echo dept to develop a protocol that clearly defines what the scoring system equals in terms of descriptive terminology. Have this protocol available in the event of an audit.

In a situation where the only documentation that you have is that the valve is 'structurally normal' (there is no documentation of stenosis or insufficiency). Code this as No to disease and No to regurgitation. This documentation implies that the valve is normal without disease or regurgitation.

If you do not have any documentation of valve insufficiency, then code insufficiency as Not Documented.

Update August 2020 - If there are multiple values for the valve regurgitation within the same echo such as Under the Mitral Value is says moderate regurgitation and Under Impression is states mild regurgitation, use the value on the final impression / conclusion / summary from the reading physician

Hemodynamic/Cath/ECHO values that are recorded as greater than or less than a value, code the value just below or above the reported value. For example, if echo reports a RVSP of < 35, code as 34, in addition if it is documented as > 35, then code 36.

SEQ. #: 7480
Long Name: Intraoperative Post-Induction/Pre-Incision Transesophageal Echo (TEE)
Short Name: IntraOpPreTEE
Definition: Indicate if an intraoperative TEE was performed after anesthesia induction and prior to incision.

Intent/Clarification:

- Yes
- No

SEQ. #: 7485
Long Name: LVEF Measured or Estimated
Short Name: PreLVEFMeas
Definition: Indicate if an intraoperative ejection fraction was performed after anesthesia induction and prior to incision.

Intent/Clarification: This field is a child to Seq # 7480.

- Yes
- No

SEQ. #: 7490
Long Name: LVEF Percentage
Short Name: PreLVEF
Definition: Indicate the estimate of Left Ventricular ejection fraction determined by post induction - pre incision intraoperative transesophageal echocardiography.

Intent/Clarification: Enter a range of 1-99. If a percentage range is reported, report a whole number using the “mean” (i.e., 50-55% is reported as 53%).

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%

- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

ACCF/AHA 2013

SEQ. #: 7491
Long Name: Left Atrial Size
Short Name: LtAtrSz
Definition: Indicate if the Left Atrial was measured on the post-induction pre-incision TEE.

Intent/Clarification: Indicate if the Left Atrial size in cm as measured on the post-induction pre-incision TEE.

- Yes
- No

SEQ. #: 7492
Long Name: Left Atrial Superior-Inferior Size
Short Name: LtAtrSupInfSz
Definition: Indicate the size of the superior-inferior portion of Left Atrial in centimeters (cm).

Intent/Clarification: This may also be documented as the LA anteroposterior diameter. If the LA size was documented on the echo and it is not specified if it was superior-inferior, code YES to Left Atrial Size SEQ 7491 and leave this field blank.

SEQ. #: 7493
Long Name: Left Atrial Medial-Lateral Size
Short Name: LtAtrMedLatSz
Definition: Indicate the size of the medial-lateral portion of the left atrial in centimeters (cm).

Intent/Clarification: This may also be documented as the LA longitudinal / transverse diameter. If the LA size was documented on the echo and it is not specified if it was Medial-Lateral, code YES to Left Atrial Size SEQ 7491 and leave this field blank.

SEQ. #: 7495
Long Name: RV Function
Short Name: PreRVFx
Definition: Indicate the estimate of RV function determined by the post induction - pre incision intraoperative transesophageal echocardiography.

Intent/Clarification:

- Normal
- Mild dysfunction

- Moderate dysfunction
- Severe dysfunction
- Not assessed

SEQ. #: 7500
Long Name: Mitral Regurgitation
Short Name: PreMR
Definition: Indicate the highest degree of mitral valve regurgitation from the post induction - pre incision intraoperative transesophageal echocardiography.

Intent/Clarification: Indicate the degree of mitral valve insufficiency/regurgitation. Code the **highest** level of valve dysfunction for example mild – moderate will be coded as moderate

- None
- Trivial/Trace
- Mild
- Moderate
- Severe
- Not assessed

SEQ. #: 7535
Long Name: Patent Foramen Ovale
Short Name: PrePFO
Definition: Indicate the presence of patent foramen ovale diagnosed by intraoperative post induction - pre incision transesophageal echocardiography.

Intent/Clarification:

- Yes
- No
- Not assessed

SEQ. #: 7540
Long Name: Ascending Aorta Assessed
Short Name: AscAoAssessed
Definition: Indicate whether the ascending aorta was assessed using TEE intraoperatively post-induction - pre incision.

Intent/Clarification: The ascending aorta includes the area from the aortic root to proximal of the innominate artery. Indicate if a TEE was performed intraoperatively to assess the ascending aorta.

- Yes
- No

SEQ. #: 7545
Long Name: Maximal Ascending Aortic Diameter
Short Name: MxAscAo

Definition: Indicate whether the ascending aorta was assessed using TEE intraoperatively post-induction - pre incision.

Intent/Clarification: Indicate the maximal diameter of the ascending aorta in centimeters using data obtained from an intraoperative TEE.

SEQ. #: 7550
Long Name: Maximal Ascending Aortic Atheroma Thickness
Short Name: MxAscAoThick
Definition: Indicate the maximal ascending aortic atherosclerotic thickness in mm as measured by intraoperative post induction - pre incision transesophageal echocardiography. If only intimal thickening and no plaque put numeric value of zero.

Intent/Clarification:

SEQ. #: 7555
Long Name: Ascending Aortic Atheroma Mobility
Short Name: AsAthMo
Definition: Indicate the ascending aortic atheroma mobility as measured by intraoperative post induction - pre incision transesophageal echocardiography.

Intent/Clarification:
Indicate if there was atheroma mobility within the ascending aorta.

- Yes
- No

SEQ. #: 7560
Long Name: Aortic Arch Visualized
Short Name: AoArcVis
Definition: Indicate whether the aortic arch was visualized.

Intent/Clarification: Indicate if an intraoperative post induction - pre incision TEE was performed that assessed the aortic arch.

- Yes
- No

SEQ. #: 7565
Long Name: Maximal Aortic Arch Atheroma Thickness
Short Name: MxArcAth
Definition: Indicate the maximal aortic arch atherosclerotic thickness in mm as measured by intraoperative post induction - pre incision transesophageal echocardiography. If only intimal thickening and no plaque put numeric value of zero.

Intent/Clarification:

SEQ. #: 7570
Long Name: Aortic Arch Atheroma Mobility
Short Name: ArcAthMo
Definition: Indicate the aortic arch atheroma mobility as measured by post induction - pre incision intraoperative transesophageal echocardiography.

Intent/Clarification:

- Yes
- No

SEQ. #: 7575
Long Name: Cardiopulmonary Bypass Used
Short Name: CPBUsed
Definition: Indicate whether cardiopulmonary bypass was used.

Intent/Clarification: Indicate if the patient was placed on cardiopulmonary bypass for any portion of the procedure.

SEQ. #: 7576
Long Name: ABG Management During Cooling
Short Name: ABGMgmtDurCool
Definition: Indicate the type of ABG management that was used during the cooling phase of cardiopulmonary bypass.

Intent/Clarification:

- Alpha-Stat - The alpha-stat management suggests we always interpret our blood gases as corrected to the same temperature (normal body temperature) irrespective of what the body temperature is.
- pH-Stat - The pH-stat management recommends that we always correct the temperature to the core body temperature.
- Unknown

SEQ. #: 7577
Long Name: ABG Management During Rewarming
Short Name: ABGMgmtDurRewarm
Definition: Indicate the type of ABG management that was used during the rewarming phase of cardiopulmonary bypass.

Intent/Clarification:

- Alpha-Stat - The alpha-stat management suggests we always interpret our blood gases as corrected to the same temperature (normal body temperature) irrespective of what the body temperature is.
- pH-Stat - The pH-stat management recommends that we always correct the temperature to the core body temperature.
- Unknown

SEQ. #: 7578
Long Name: Arterial Outflow Temperature Measured
Short Name: ArtOutTempMeas

Definition: Indicate if arterial outflow temperature was measured during cardiopulmonary bypass.

Intent/Clarification:

- Yes
- No

SEQ. #: 7579
Long Name: Highest Arterial Outflow Temperature
Short Name: HighArtOutTemp
Definition: Indicate the highest arterail outflow temperature during the rewarming phase of cardiopulmonary bypass.

Intent/Clarification: Indicate the highest arterial outflow temperature measured in °C during the rewarming phase of cardiopulmonary bypass. **Update August 2020 - The intent is to know if the arterial outflow temperature was measured by perfusion and if so, what was the highest arterial outflow temperature during rewarming. Update Oct 2020 – The start of rewarming is defined by documentation that the rewarming phase begins on the perfusion record.**

SEQ. #: 7580
Long Name: Retrograde Autologous Priming of CPB Circuit
Short Name: RetrAutolPrim
Definition: Indicate whether retrograde autologous priming was used by the cardiopulmonary perfusion team prior to the onset of cardiopulmonary bypass.

Intent/Clarification: Retrograde autologous priming is technique used by cardiopulmonary perfusionists to minimize hemodilution and hypotension during onset of cardiopulmonary bypass. This information can usually be obtained in the perfusion record.

SEQ. #: 7585
Long Name: Total Crystalloid Administered by Perfusion Team
Short Name: TotCrystPerf
Definition: Indicate the total volume of intravenous crystalloid fluids administered by cardiopulmonary perfusion team. The data should be record in milliliters. Enter zero if fluid crystalloid not used by perfusion team. Do not record any blood products in this data field.

Intent/Clarification: This does not include crystalloid prime or cardioplegia. The intent is to capture only additional crystalloid added to the circuit.

Do not include amount given by anesthesia, this is captured in SEQ. #7450. If input and output amounts are listed, record the input amount.

SEQ. #: 7586
Long Name: Crystalloid Administered by Perfusion Team - Type
Short Name: CrystPerfTy

Definition: Indicate the type of crystalloid fluid given by Perfusion.

Intent/Clarification: If another type of crystalloid is given, enter the amount in SEQ 7585 Total Crystalloid Administered by Perfusion Team and leave this field blank

- 0.9 Sodium Chloride
- Normosol
- Ringer's Lactate
- Plasmalyte

SEQ. #: 7595
Long Name: Total 5% Albumin Administered by Perfusion Team
Short Name: TotAlbumPerf
Definition: Indicate the total volume of intravenous human serum albumin fluids (5%) administered by the cardiopulmonary perfusion team. The data should be recorded in milliliters. Enter zero if 5% albumin not administered by perfusion team. Do not record any blood.

Intent/Clarification: This includes **any 5% albumin** given by the perfusion team, even if added to prime.

SEQ. #: 7596
Long Name: Total 25% Albumin Administered by Perfusion Team
Short Name: Tot25AlbumPerf
Definition: Indicate the total amount of 25% Albumin given by Perfusion. Only include fluid administered by Perfusion.

Intent/Clarification: This includes **any 25% albumin** given by the perfusion team, even if added to prime. Do not record any blood products in this data field.

SEQ. #: 7600
Long Name: Hemofiltration Volume Removed by Perfusion Team
Short Name: HemofilPerf
Definition: Indicate the total volume of ultrafiltrate removed by the cardiopulmonary perfusion team during cardiopulmonary bypass and during modified ultra-hemofiltration post-CPB. Record the data in milliliters.

Intent/Clarification: Hemofiltration is used to concentrate the red blood cells and plasma proteins in the circulation during and immediately following CPB.

Indicate the total volume of fluid removed by hemofiltration intraoperatively after the initiation of the initial cardiopulmonary bypass as recorded on the perfusion record.

Time frame is at the start of the initial cardiopulmonary bypass to admission to the ICU.

SEQ. #: 7605
Long Name: Inotropes used to wean from CPB

Short Name: InotropWeanCPB
Definition: Indicate the usage of inotropic drug infusions to facilitate weaning from cardiopulmonary bypass. For this data field, any drug infusion with inotropic properties, including catecholamines, phosphodiesterase inhibitors, and calcium sensitizers, should be recorded.

Intent/Clarification: Indicate if inotropes were used to facilitate the weaning process from cardiopulmonary bypass. Select "Yes" if any drug with inotropic property was administered during the weaning process.

Inotropic drugs increase the pumping effect of the heart muscle, making the heart pump stronger. Common inotropic drugs include epinephrine, norepinephrine, dopamine, dobutamine, levosimendan, and milrinone. This also includes drugs with inotropic properties such as catecholamines, phosphodiesterase inhibitors, and calcium sensitizers.

If timing is unclear, obtain clarification regarding timing of the weaning process from the Cardiothoracic Anesthesiology team at your facility.

SEQ. #: 7610
Long Name: Vasopressors used to wean from CPB
Short Name: VasopWeanCPB
Definition: Indicate the usage of vasoconstrictive drugs to facilitate weaning from cardiopulmonary bypass. For this data field, any drug infusion at a dosage range with clinically vasoconstrictive properties, including catecholamines and pure vasoconstrictors, should be recorded. Also record usage of drugs with inotropic effects that have vasoconstrictive properties in higher doses, such as dopamine and epinephrine.

Intent/Clarification: Indicate if vasopressors were used to facilitate the weaning process from cardiopulmonary bypass. Select "Yes" for any drug with vasoconstrictive property that was administered, this includes inotropic drugs (such as epinephrine and dopamine) that can be dosed at vasoconstrictive levels or pure vasoconstrictors such as vasopressin or phenylephrine. Vasoconstrictive drugs constrict the blood vessels raising blood pressure.

Common vasoconstrictor drugs include dopamine, epinephrine, neosynephrine/phenylephrine, norepinephrine (Levophed) and vasopressin.

If timing is unclear, obtain clarification regarding timing of the weaning process from the Cardiothoracic Anesthesiology team at your facility.

SEQ. #: 7612
Long Name: Cell saver volume
Short Name: CellSavVol
Definition: Indicate the total volume of any cell-saver blood that was transfused intraoperatively. Include any volume started after OR Entry even if the infusion completed post-operatively. Do not include autologous, allogeneic, pump-residual, or chest-tube recirculated blood. Value should be recorded in milliliters.

Intent/Clarification: Cell-saver blood is blood that the patient loses during surgery which is transfused back to the patient. Time frame includes any cell-saver infusions started intraoperatively regardless if they completion time is after OR Exit date/time. This type of data could be obtained from the Perfusionist record who was assigned to that specific case.

Some hospitals will bag the residual pump blood and the anesthesiologist hangs it and gives some extra protamine. This is not the same as Cell Saver blood and should not be included here.

SEQ. #: 7614
Long Name: Protamine total dose
Short Name: TotProt
Definition: Indicate the total dose of protamine given intraoperatively to reverse heparinization after separation from CPB prior to OR Exit. Value should be recorded in milligrams. Do not include doses given in the ICU.

Intent/Clarification: Include any protamine given intraoperatively regardless if the patient went on bypass or not**.** Protamine is a medication given used to reverse the effects of heparin within the operating room.

SEQ. #: 7615
Long Name: Intraoperative Post-procedure TEE Performed
Short Name: IntraOpPostTEE
Definition: Indicate whether intraoperative transesophageal echocardiogram (TEE) was performed intraoperatively after weaning from CPB and prior to OR exit time.

Intent/Clarification:

- Yes
- No

SEQ. #: 7620
Long Name: Systolic Anterior Motion of Mitral Valve
Short Name: PostSAM
Definition: Indicate the presence of systolic anterior motion (SAM) of the mitral valve as determined by post procedure intraoperative transesophageal echocardiography prior to Skin Incision Stop time. Choose Yes for any SAM between weaning from CPB and Skin Incision Stop time

Intent/Clarification: Time frame is **after weaning from cardiopulmonary bypass to OR Exit time.** Code as Yes only if the last TEE prior to leaving the OR indicates the presence of SAM.

- Yes
- No
- Not assessed - Choose “Not assessed” if a post-procedure transesophageal echocardiogram (TEE) was performed but systolic anterior motion of the mitral valve was not documented.

SEQ. #: 7625
Long Name: Return to CPB for Echo-Related Diagnosis
Short Name: RetCPBEch
Definition: Indicate if the patient had to be placed back on cardiopulmonary bypass for a surgical revisit as a result from findings on the post-procedure TEE prior to OR Exit time.

Intent/Clarification:

- Yes
- No

SEQ. #: 7626
Long Name: Reason for return to CPB
Short Name: RetCPBRsn
Definition: Indicate the reason why the patient required a return to cardiopulmonary bypass.

Intent/Clarification:

- New Wall Motion Abnormality (such as Coronary Malperfusion that does not lead to ventricular failure)
- Residual Valvular Leak
- Systolic Anterior Motion (SAM)
- Paravalvular Leak
- Ventricular Failure – Ventricular failure as a result of global dysfunction that requires institution of a mechanical assist such as impella or VAD and/or institution of ECMO.
- Other
- Unknown

SEQ. #: 7627
Long Name: Reason for return to CPB - Ventricular Failure Type
Short Name: RetCPBRsnVentFailTy
Definition: Indicate the type of ventricular failure leading to the return to cardiopulmonary bypass.

Intent/Clarification:

- Left Ventricular Failure
- Right Ventricular Failure
- Bi-Ventricular Failure
- Unknown

SEQ. #: 7630
Long Name: Post-Procedure Left Ventricular Ejection Fraction Measured
Short Name: PostLVEFMeas
Definition: Indicate whether left ventricular ejection fraction was measured by Anesthesia using transoesophageal echocardiography intraoperatively post-procedure after final discontinuation of CPB.

Intent/Clarification: Time frame for TEE is the closest time before OR Exit time after final discontinuation of cardiopulmonary bypass time.

Note: If a cardiologist is called into surgery to complete an echo, you can use the echo results if the TEE was done before OR Exit time after final discontinuation of cardiopulmonary bypass time.

SEQ. #: 7635
Long Name: Post-Procedure Left Ventricular Ejection Fraction Estimate
Short Name: PostLVEF
Definition: Indicate the post-procedure estimate of left ventricular ejection fraction determined by intraoperative transesophageal echocardiography.

Intent/Clarification: Record the mean ejection fraction (EF) closest to OR Exit Time. Enter a range of 1-99. If a percentage range is reported, report a whole number using the "mean" (i.e., 50-55% is reported as 53%).

If only a descriptive term is reported, code as below:

- Hyperdynamic: code 71%
- Normal: code 60%
- Mild dysfunction: code 45%
- Moderate dysfunction: code 35%
- Severe dysfunction: code 29%

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Note: If no diagnostic report is in the medical record, a value documented in the medical record is acceptable.

SEQ. #: 7640
Long Name: Post-Procedure Right Ventricular Function
Short Name: PostRVFx
Definition: Indicate the post-procedure estimate of RV function determined by intraoperative transesophageal echocardiography.

Intent/Clarification: If a range is reported (i.e. mild-moderate) choose the highest range reported. Time frame for TEE is the closest time before OR Exit time after final discontinuation of bypass time.

- Normal
- Mild dysfunction
- Moderate dysfunction
- Severe dysfunction
- Not assessed - Choose "not assessed" if a post-procedure TEE is performed, but right ventricular dysfunction is not documented.

SEQ. #: 7645
Long Name: Patient Died Within The OR
Short Name: ORDeath
Definition: Indicate whether the patient died within the OR.

Intent/Clarification: Time frame is from OR Entry to OR Exit time.

- Yes
- No

SEQ. #: 7650
Long Name: Core Temperature Upon Entry To ICU/PACU Measured
Short Name: PostTempMeas
Definition: Indicate whether the core temperature was measured in degrees Centigrade after OR exit to one hour post OR exit.

Intent/Clarification: Core temperature locations include: bladder, rectum, pulmonary artery, esophageal, nasopharyngeal, and tympanic. Temperature should be obtained within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7655
Long Name: Core Temperature Upon Entry To ICU/PACU
Short Name: PostCoreTemp
Definition: Indicate the core temperature in degrees Centrigrade after OR Exit to one hour post OR Exit.

Intent/Clarification: The intent is to capture the initial documented core temperature in the intensive care unit, as per the normal routine for core temperature monitoring in the ICU/PACU.

SEQ. #: 7660
Long Name: Postoperative INR Measured
Short Name: PostINRMeas
Definition: Indicate whether the International normalized ratio (INR) was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an International Normalized Ratio (INR) was measured. This lab is usually part of the Prothrombin test (PT/INR). Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7665
Long Name: First Postoperative INR
Short Name: PostINR
Definition: Indicate the first international normalized ratio (INR) value after OR Exit to one hour post OR Exit.

Intent/Clarification: INR is the standard unit used to report the result of a prothrombin (PT) test. The hospital laboratory report should be accessed first when coding this

variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7670
Long Name: WBC Upon Entry To ICU/PACU Measured
Short Name: PostWBCMeas
Definition: Indicate whether the white blood cell count was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an initial white blood cell count (WBC) was measured. This is usually part of the complete blood count (CBC) test. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7675
Long Name: WBC Upon Entry To ICU/PACU
Short Name: PostWBC
Definition: Indicate the first white blood cell count after OR Exit to one hour post OR Exit.

Intent/Clarification: White Blood Cells (leukocytes) are part of the body's immune defense and are often elevated in the presence of infection. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7680
Long Name: Platelets Upon Entry To ICU/PACU Measured
Short Name: PostPltMeas
Definition: Indicate whether the platelet count was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an initial platelet count (PLT) was measured. This is usually part of the complete blood count (CBC) test. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7685
Long Name: Platelets Upon Entry To ICU/PACU
Short Name: PostPlt
Definition: Indicate the first platelet count after OR Exit to one hour post OR Exit.

Intent/Clarification: Platelets are a blood component instrumental in clot formation. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7686
Long Name: Hemoglobin Measured upon admission to Post Op Care Location (PACU, ICU)
Short Name: PostHemMeas
Definition: Indicate if the hemoglobin was measured one hour after OR Exit.

Intent/Clarification: Document if an initial hemoglobin (Hgb) was measured after OR Exit to one hour post OR Exit. This is usually part of the complete blood count (CBC) test. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7687
Long Name: Hemoglobin Upon Entry To ICU/PACU
Short Name: PostHem
Definition: Indicate the patient's hemoglobin within one hour post OR Exit in g/dl or g/100 ml or g%.

Intent/Clarification: Hemoglobin is the protein molecule in red blood cells that carries oxygen from the lungs to the body's tissues and returns carbon dioxide from the tissues back to the lungs. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7690
Long Name: Hematocrit Upon Entry To ICU/PACU Measured
Short Name: PostHCTMeas
Definition: Indicate whether the hematocrit value was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an initial hematocrit level (HCT) was measured. This is usually part of the complete blood count (CBC) test or hemoglobin/hematocrit (H/H) test. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7695
Long Name: Hematocrit Upon Entry To ICU/PACU
Short Name: PostHCT
Definition: Indicate the first hematocrit value measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Hematocrit is the proportion of red cells in the blood. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7696
Long Name: Fibrinogen Upon Entry To ICU/PACU Measured

Short Name: PostFibrinMeas
Definition: Indicate whether fibrinogen was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an initial fibrinogen level was measured. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7697
Long Name: Fibrinogen Upon Entry To ICU/PACU
Short Name: PostFibrin
Definition: Indicate the fibrinogen level measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Fibrinogen, or factor I, is a blood plasma protein that's made in the liver. Fibrinogen is one of 13 coagulation factors responsible for normal blood clotting. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7700

Long Name: Lactate Upon Entry To ICU/PACU Measured
Short Name: PostLactMeas
Definition: Indicate whether the lactate value was measured after OR Exit to one hour post OR Exit.

Intent/Clarification: Document if an initial Lactate level (Lactic Acid) was measured. Laboratory values should be drawn within one hour of arrival in the ICU/PACU.

- Yes
- No

SEQ. #: 7705
Long Name: Lactate Upon Entry To ICU/PACU
Short Name: PostLact
Definition: Indicate the value of lactate in **Update Oct 2020 ~~mg/dl~~ mmol/L** measured after OR Exit to one hour post OR Exit. Do not record missing data as a zero value.

Intent/Clarification: Serum lactate is a marker for the duration and severity of malperfusion during critical states. The magnitude of serum lactate has been associated with mortality and adverse outcomes. The hospital laboratory report should be accessed first when coding this variable. If this is unavailable, then additional source documents may be referenced for lab results.

SEQ. #: 7708
Long Name: Postoperative Peak Glucose within 18-24 hours after OR Exit Time

Short Name: PostOpPeakGlu
Definition: Indicate the postoperative peak glucose measured within 18-24 hours of anesthesia end time.

Intent/Clarification: Code the highest postoperative glucose 18 – 24 hours **after OR exit time**. Can be serum or POC (point of care). The unit of measurement for Glucose is mg/dl.

Hyperglycemia has been associated with increased in-hospital morbidity and mortality in patients undergoing surgery. The risk of infection was significantly higher for patients undergoing CABG if blood glucose levels were elevated. Hyperglycemia in the immediate postoperative phase increases infection in both diabetic and nondiabetic patients and the higher the level of hyperglycemia the higher the potential for infection in both populations.

Cardiac surgery patients must have controlled postoperative blood glucose (less than or equal to 180 mg/dL) in the timeframe of 18 to 24 hours after OR exit time.
(Van den Berghe, 2001) (Zerr, et al 1997) (Latham, et al, 2001)

SEQ. #: 7715
Long Name: Postop Infusion: Propofol
Short Name: PropPost
Definition: Indicate the use of propofol infusion after OR Exit to ICU discharge.

Intent/Clarification: Indicate if the patient received a Propofol infusion after admission to the ICU/PACU following cardiac surgery. Time frame is from OR Exit to ICU Discharge.

This does not include bolus doses.

SEQ. #: 7716
Long Name: Post Op Other Sedation
Short Name: PostOthSed
Definition: Indicate if the patient required any other type of post-operative sedation from OR Exit to initial ICU Exit.

Intent/Clarification: Capture IV sedation, other than propofol. May include benzodiazepines such as midalozam or lorazepam, fentanyl, dexmedetomidine (precedex). Do not capture paralytic drugs in this field. **Update October 2020 – this does not include PRN IV sedatives. The intent is to capture IV infusions of the above listed sedatives.**

SEQ. #: 7720
Long Name: Postoperative Delirium
Short Name: PostopDel
Definition: Indicate whether the patient experienced postoperative delirium from OR Exit to ICU discharge.

Intent/Clarification: Indicate if the patient experienced postoperative delirium as evidenced by change in mental status (including memory loss, personality changes, lethargy, and changes in cognitive ability) without evidence of a stroke or coma.

Sites need physician documentation to code yes for post op delirium. Includes delirium for patients with delirium tremens.

Time frame is from OR Exit to initial ICU Discharge. Do not include delirium that may occur during a readmit to the ICU.

<u>Definition of Post-operative Delirium</u>
Post-operative delirium is a state of global brain dysfunction occurring after a surgical procedure, the diagnosis of which is made by establishing:

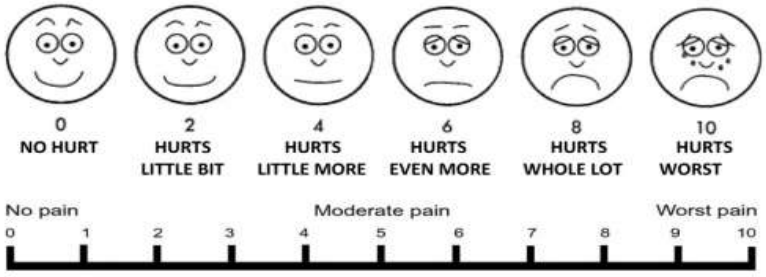
- An acute disturbance in level of arousal (may be lethargy-stupor or hypervigilance-agitation) and an acute disturbance in cognition.
    - Identifying these disturbances as representing an acute change in the patient's baseline level of arousal and cognition requires the establishment of baseline functioning in these areas from corroborative sources including family, friends, and caregivers. *Note*: Even patients with poor baseline levels of cognitive function (i.e. pre-existing Dementia) can develop superimposed delirium.
    - The hallmark cognitive changes associated with delirium is a disturbance in attention (reduced ability to direct, focus, sustain, or shift attention) and awareness (reduced orientation to environment).
- These changes must develop over a short period of time (usually hours to a few days).
- These changes in cognition and level of arousal must demonstrate a pattern of fluctuation in severity during course of the day (i.e. there can be intervening periods of lucidity).
- Additional cognitive disturbances which may manifest during an episode of Delirium:
    - Memory deficits
    - Disorientation
    - Language
    - Visuospatial ability
- Additional behavioral disturbances which may manifest during an episode of delirium:
    - Changes in sleep-wake cycle
    - Hostility
    - Verbal and physical aggression
    - Unintentional self-harm (i.e. self-extubation, removal of catheters, falling out of bed)
    - Uncooperativeness with care
    - Euphoria
    - Hallucinations (visual or auditory)
    - Delusions (typically paranoid)
    - Disorganized thinking

SEQ. #: 7730
Long Name: Pain Score POD #3
Short Name: PainScorePOD3

Definition: Indicate the pain score on postoperative day #3 (Integer Rating Scale). Highest pain score on postoperative day #3 on the 0-10 integer scale, if recorded, or record score as missing.

Intent/Clarification: Record the highest pain score using the integer scale from 0-10 on postoperative day 3. With a score of “0” indicating no pain and a score of “10” indicating the worse possible pain ever imagined. If the patient was evaluated on a non-numerical scale use the corresponding answer related to the 1-10 scale.

The timeframe is counted by days, not hours so POD 0 is the day of surgery, POD 1 is the day after surgery, etc.



SEQ. #: 7735
Long Name: Pain Score Hospital Discharge
Short Name: PainScoreDisch
Definition: Indicate the pain score on day of discharge (Integer Rating Scale). Highest pain score recorded on day of discharge on the 0-10 integer scale, if recorded, or record score as missing.

Intent/Clarification: Record the highest pain score using the integer scale from 0-10 on the day of discharge from the hospital inpatient stay. With a score of “0” indicating no pain and a score of “10” indicating the worse possible pain ever imagined. If the patient was evaluated on a non-numerical scale use the corresponding answer related to the 1-10 scale.