

**NEW YORK STATE DEPARTMENT OF HEALTH
OFFICE OF QUALITY AND PATIENT SAFETY
CARDIAC SERVICES PROGRAM**

**2019 Data Collection:
12/1/2018 – 11/30/2019 Discharges**

**Cardiac Surgery Report, Adult
(Age 18 and Over)**

**Instructions and Data Element
Definitions
Form DOH-2254a**

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Revision Highlights and Coding Clarifications

Data Element Updates

The following changes take effect December 1, 2018. Complete data element definitions are located in the main body of this document.

There are no new or deleted data elements for 2019 Discharge Year (discharges from 12/1/2018-11/30/2019). There are several data element definition changes or additional clarifications which are highlighted below and detailed in the full text of the document.

Revised or Updated Data Elements

Medical Record Number: May now include characters A-Z and 0-9.

Procedure Codes: Clarification has been added to report both repair and replacement when a repair is attempted, and the case converts to a replacement. Procedure code 786 is now called "Major Surgery for Pre-existing Aortic Disease."

Pre-Induction Blood Pressure: A clarification has been added for how to report this information for patients who do not experience "induction of anesthesia."

Valve Disease: A reporting clarification has been added.

Mitral Valve Disease Type/Etiology: A reporting clarification has been added for patients who have previously had a mitral valve replacement.

Five Meter Walk Test: This information may be reported if available from within 90 days before the procedure.

Peripheral Vascular Disease: Additional examples of acceptable conditions have been added.

Heart Failure: The name of the data element has changed and guidance on when to report the risk factor has been added.

Extensive Aortic Atherosclerosis: The definition has changed.

GI Event (Major Events section): The definition has been modified to maintain alignment with STS data element.

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When to Complete an Adult CSRS Form

Complete an Adult Cardiac Surgery Reporting System (CSRS) form for every patient age 18 or over on admission undergoing one or more operations on the heart or great vessels, with or without extracorporeal circulation.

Unless otherwise specified, forms should be submitted for reportable cardiac surgery no matter where in the hospital the operation is performed. References to the “operating room” in these instructions can be interpreted to mean “the location where the cardiac procedure is occurring.”

If the patient has more than one cardiac surgery during a single hospital stay, complete a separate form for each reportable cardiac surgery.

Transcatheter valve replacement procedures should be reported to CSRS, wherever the procedure may occur

Attempted and aborted cardiac surgery and transcatheter valve replacement should be reported. See “Guidance on Selecting Appropriate Procedure Codes” for additional details and definitions.

DO NOT CODE:

- Femoral artery repair or bypass
- Thymectomy
- Coronary endarterectomies
- Subclavian artery bypass
- Innominate artery bypass
- Carotid artery bypass
- Removal of thymoma
- Ventricular support device (e.g. Heartnet restraint)
- Aortic wrapping procedures
- Exploration alone (no repair) for confirmed or suspected bleeding after reportable cardiac surgery in the same admission.
- Implantation of pacemaker and/or its leads or wires

When to Complete an Adult CSRS Form (continued)

Report the following procedures as “998 – Other” or “498 – Other (No Bypass)” only when they are the only cardiac surgery during the admission. Only report these procedures if they were performed using an open surgical approach; do not report if using a percutaneous approach:

- Intra-cardiac thrombus removal
- Intra-coronary thrombus removal
- Epicardial lead placement
- Coronary aneurysm repair (other than CABG)
- Ligation or excision of left atrial appendage
- Surgical removal of a stent
- Aortic endarterectomy
- Pulmonary artery endarterectomy

During quarterly and annual data verification and validation efforts, supporting documentation for cases coded as 398, 498, or 998 may be requested. Therefore, we highly recommend that at the time of coding you keep a copy of the operative note as supporting documentation in a place for easy retrieval at a later date.

Code the following procedures only when they are performed at the same time as another reportable cardiac surgery:

- Carotid endarterectomy (763)
- Implantation of an AICD (764)
- Percutaneous Ventricular Assist Device (use procedure code 830)
- Descending Thoracic Endovascular Aortic Repair (998)

Code the following only when performed at the same time as a CABG or valve surgery:

- Percutaneous Coronary Intervention (711)

Code the following procedure only when performed in the same admission as a reportable cardiac surgical procedure:

- ECMO (834)

Guidance on Selecting Appropriate Procedure Codes

PERICARDIECTOMY (402)

Performing a total pericardiectomy (meaning phrenic to phrenic pericardiectomy) is always reportable whether or not the patient was on CP bypass for that portion of the procedure. Pericardial window or partial pericardiectomy that is not phrenic-to-phrenic should not be coded.

VALVE REPAIR AND REPLACEMENT

Valve Replacements and Repairs: When a repair is attempted, and the valve is ultimately replaced in the same procedure, report both the repair and the replacement.

Aortic Valve Replacements: Do not code aortic root enlargements when performed with aortic valve replacements.

Valve Debridement: If a valve has had debridement, then a valve repair should be coded.

Bicuspid Aortic Valve: When a bicuspid aortic valve is being operated on for a patient who is not in the childhood era and the operation is required due to acquired valve disease, it should be coded as a standard valve procedure (Code 520-548).

Third Digit for Valve Replacement (510- 608): When reporting valve replacement surgery (codes 510-608), use the third digit to indicate if the valve(s) currently being replaced have been previously intervened upon and if so the reason for the reoperation.

The third digit information is specific to the valve reported. For example, a patient with previous aortic valve replacement who is now having mitral valve replacement (mechanical) would be reported using code 550 because this is not a re-operation on the mitral valve. In the event of multiple valve surgery, the third digit may be different for each valve code reported, i.e. one valve may be a re-op and the other(s) may not.

Codes for re-operation due to failed catheter-based or surgical valve repair and as a complication of a transcatheter valve replacement are also available. Use code 7 (Complication of Transcatheter Valve Replacement) in the event of an unsuccessful transcatheter valve replacement which requires urgent or emergent surgical valve replacement.

Adjunct Valve Information (640-645): Use these codes to indicate a transcatheter valve replacement has been performed and by which approach.

These procedures should be reported even if they do not occur in the operating room. A valve replacement code must also be reported.

Guidance on Selecting Appropriate Procedure Codes

PCI IN SAME SETTING AS CABG OR VALVE SURGERY (711):

Use this procedure code to indicate percutaneous coronary intervention (PCI) was performed in the same procedure room visit as CABG or valve surgery. This may take place in the OR or some other location such as a hybrid procedure room. This procedure should only be reported if done at the same time as CABG or valve surgery (including transcatheter valve replacement). The PCI must be reported to the Percutaneous Coronary Interventions Reporting System if the PCI was performed for the treatment of pre-existing coronary artery disease.

RADIOFREQUENCY OR OPERATIVE ABLATION (770-772):

Code 770 (Atrial) or 771 (Ventricle) should be used when lesions are created in the atria or ventricle by an energy source (radiofrequency, microwave, cryothermia, etc.). The lesion then disrupts the abnormal re-entry pathways of electrical signals that can lead to fibrillation.

Maze (772) should be coded when there is a standard surgical maze procedure in which full thickness incisions are made in the atria of the heart. Sutures are then used to reapproximate the incised tissue. The resulting lesion disrupts the abnormal re-entry pathways of electrical signals that lead to atrial fibrillation.

Procedures coded 772 may require an operative note to verify coding.

AORTA SURGERY

Major Surgery on the Aorta (786, 804, 805): Several procedure codes are available for reporting surgery for pre-existing aortic conditions.

Surgery on the Aorta

786	Major Surgery for Pre-existing Aortic Disease
804	Major Surgery for Pre-existing Aortic Dissections
805	Surgery for Repair of Aortic Deceleration Injury

Clarification:

Use procedure code 786 for major surgery for pre-existing disease in the thoracic aorta. This code should be used for aneurysms and conditions other than dissection (e.g. endocarditis, calcification without dissection), that were present prior to the reportable cardiac surgery.

Use procedure code 804 for major surgery on dissections of the thoracic aorta.

Use procedure code 805 for open surgical repair of an aortic deceleration injury.

Guidance on Selecting Appropriate Procedure Codes (continued)

AORTA SURGERY (continued)

Do not use 786, 804 or 805 to capture surgery undertaken to repair an intra-operative injury to the aorta. A major procedure on the aorta that is the result of an intra-operative injury may be reported with procedure code 907. This will not remove a case from analysis.

Do not use 786, 804, 805 to capture elements of the operation that are part of a routine valve procedure. For example, aortic root enlargement when performed with an aortic valve replacement should not be coded as 786.

When the procedure includes an aortic valve repair or replacement (e.g. Bentall), report the valve procedure with an appropriate code in addition to the aorta code.

VENTRICULAR ASSIST DEVICE

VAD removal (835): Should be coded when this is performed without placement of a new Ventricular Assist Device.

Ventricular Assist Device as a Destination Therapy (840): If an LVAD is placed as the final therapy, code 840 in addition to the LVAD. For example, if the patient is not a candidate for a heart transplant, but an LVAD is placed as a long-term treatment option this code would be appropriate.

REMOVAL OF INTRACARDIAC NEOPLASM (904)

Report when there is histopathological confirmation that the mass removed was a neoplasm. Report only if the mass is removed.

REPAIR OF CARDIAC LACERATION DUE TO TRAUMA (907)

Should be coded for repair of cardiac laceration due to trauma including a procedure to repair an injury to the heart that has resulted from a cardiac diagnostic or interventional procedure or from cardiac surgery.

Guidance on Selecting Appropriate Procedure Codes (continued)

REMOVAL OF PACEMAKER OR AICD AND/OR LEADS OR WIRES (908):

Should be coded when device/lead removal is the primary goal of the operation. It should not be used when device/lead removal is an incidental part of another cardiac surgery. Only open procedures are reportable with this code. Do not report laser lead extraction.

Opening the pocket is not considered an “open” procedure in this context. Typically, a case reportable as “908” will involve a sternotomy or a thoracotomy.

The defining criteria for reporting these cases is not who performs them but how they are performed (i.e. open surgical approach with lead/device removal as the primary goal of the operation). It is unusual for an electrophysiologist or cardiologist to perform an open cardiac surgical removal of devices or leads.

If an open surgical procedure is required to remove leads, this may be the primary goal of the operation (the primary reason it was performed with an open surgical approach) and therefore could still be reportable even if new leads or devices were placed.

If an open surgical approach is used for at least one of the leads, then report it. It does not matter if laser is reported for any other leads.

ATTEMPTED / ABORTED PROCEDURES

Attempted Transcatheter Valve Replacement (930): should be reported when there is any vascular penetration of the patient designed to carry out a transcatheter valve replacement procedure, but the procedure did not proceed to completion. Also report the primary valve code (520-608) and the adjunct valve information code (640-645).

Aborted Transcatheter Valve Replacement (931): should be used when the sheath for delivery of the valve has been inserted, but the procedure does not proceed to completion. If reporting aborted, you should not also report attempted. Also report the primary valve code (520-608) and the adjunct valve information code (640-645).

Codes 930 and 931 may be reported in addition to codes for procedures that were performed. For example, an aborted TAVR that leads to a surgical AVR in the same visit may be coded as 530, 640, 931 537.

Attempted Surgical Procedure (932): Should be reported when the patient entered the operating room or its equivalent for a cardiac surgical procedure and the procedure is discontinued before any incision is made (primary or harvest site incision).

Guidance on Selecting Appropriate Procedure Codes (continued)

ATTEMPTED / ABORTED PROCEDURES (continued)

Aborted Surgical Procedure (933): Should be reported when the procedure is aborted after an incision has been made (primary or harvest site incision). Report exploration of the atria, aorta, valves, ventricles, or pulmonary artery as “Aborted Procedure” if there was no other reportable cardiac surgery performed at the same time – except when the exploration was after a reportable cardiac surgery for suspected or confirmed bleeding. This scenario would be reported as a major event but is not form-generating if there was no surgical intervention performed.

Only report codes 932 and 933 if there was no reportable cardiac procedure performed. Also report the codes for the procedure that was intended to be performed

CSRS Data Reporting Policies

Hospice Policy

Beginning with patients discharged on or after January 1, 2003, any patient that is discharged from the hospital after cardiac surgery or PCI to hospice care (inpatient or home with hospice care) and is still alive for 30 days after the discharge from the hospital will be analyzed as a live discharge.

All patients discharged to a hospice or home with hospice care should continue to be reported with Discharge Status – 12: Hospice. If a patient is still alive 30 days after discharge, whether in hospice or not, appropriate supporting documentation should be sent to Cardiac Services Program. Examples of appropriate documentation include but are not limited to: a dated progress note from the hospice service, evidence of a follow-up doctor's visit more than 30 days after discharge, evidence of subsequent hospital admission more than 30 days after initial discharge, or evidence of death more than 30 days after initial discharge.

It will be the responsibility of the hospital (physician) to send documentation to the Department of Health's Cardiac Services Program to support this change. Upon receipt, review, and verification of the documentation, Cardiac Services Program staff will change the discharge status from dead to alive for purposes of analysis. All documentation must be received before the final volume and mortality for a given year of data is confirmed by the hospital.

Refractory Cardiogenic Shock Cases

Effective January 1, 2015, cases with the risk factor "Refractory Cardiogenic Shock" will be excluded from provider-specific publicly released reports and analyses. Cases with the risk factor "Cardiogenic Shock" will remain in analysis.

This continues the shock exclusion policy which was initiated in 2006 and reflects revised definitions and variable names. All excluded cases must meet the NYS Cardiac Services Program definition of Refractory Cardiogenic Shock and will be subject to medical record documentation review.

All cases will continue to be reported electronically and will be subject to data verification and quality monitoring activities. To ensure that the appropriate cases are identified as "Refractory Cardiogenic Shock" cases, submission of medical record documentation for any case reported with this risk factor will be required. If appropriate documentation is not provided by your center, the risk factor will be removed from the data and the case will be included in analysis. Medical record documentation will also be required for any case reported with the risk factor "Cardiogenic Shock."

It is strongly suggested that all appropriate staff closely review the definitions and documentation requirements for these two risk factors.

CSRS Data Reporting Policies (continued)

Physician Assignment

When multiple records exist for the same patient during a hospital admission and two or more surgeons were reported for those operations, the case will be assigned for analysis to the surgeon performing the first surgery. However, the hospital may submit a letter from the CEO or Medical Director requesting that the case be assigned to the surgeon performing the later surgery.

Alignment with STS Data Elements

As noted in the main body of this document, some data element definitions are aligned with STS Adult Cardiac Surgery data elements. Please note, every attempt has been made to assure accurate and complete definitional alignment at the time the NYS CSRS data element definitions are released. The definitions presented here should be used for all CSRS data reporting unless a clarification or amendment is issued by the Cardiac Services Program. Changes to STS data elements, definitions, clarifications or interpretations that occur during the data collection period do not supersede the CSRS definitions and reporting instructions issued by the Cardiac Services Program.

Reporting Schedule

CSRS data is reported quarterly by discharge date. It is due to the Cardiac Services Program two months after the end of the quarter. The 2019 reporting schedule is as follows.

Quarter 1: Discharges	12/01/18 – 02/28/19	Due: 05/01/19
Quarter 2: Discharges	03/01/19 – 05/31/19	Due: 08/01/19
Quarter 3: Discharges	06/01/19 – 08/31/19	Due: 11/01/19
Quarter 4: Discharges	09/01/19 – 11/30/19	Due: 02/01/20

Limited extensions to the above deadlines will be granted on a case by case basis when warranted by extenuating circumstances. They must be requested in writing prior to the required submission date.

Item-By-Item Instructions

PFI Number

Variable Name: PFI

The PFI Number is a Permanent Facility Identifier assigned by the Department of Health. Enter your facility's PFI Number as shown in Attachment A.

Sequence Number

Variable Name: SEQUENCE

If your facility assigns a sequence number to each case on a chronological flow sheet or similar log, enter the sequence number here. The sequence number is not required for the Cardiac Surgery Reporting System but has been included on the form in case your facility finds it useful in identifying and tracking cases.

I. Patient Information

Patient Name

Variable Names: LASTNAME, FIRSTNAME

Enter the patient's last name followed by his/her first name.

Medical Record Number

Variable Name: MEDRECNO

Enter the patient's medical record number.

Reporting Note: Characters A-Z and 0-9 may be reported. Do not report punctuation or other symbols of any kind in the medical record number.

Social Security Number

Variable Name: SSNO

Enter the patient's Social Security Number as shown in the medical record. If the medical record does not contain the patient's Social Security Number, leave this item blank.

I. Patient Information (continued)

Date of Birth

Variable Name: DOB

Enter the patient's exact date of birth.

Sex

Variable Name: SEX

Check the appropriate box for the patient's sex at birth.

Note: In the absence of any other information, it is reasonable to assume that the sex at birth is the same as at the time of admission.

Ethnicity

Variable Name: ETHNIC

Check the appropriate box.

Note: The term "Hispanic" refers to persons who trace their origin or descent to Mexico, Puerto Rico, Cuba, Central and South America or other Spanish cultures.

Race

Variable Names: RACE, RACESPEC

Choose the appropriate response from the list below.

1 - White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

2 - Black or African American. 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."

3 - Native American / American Indian or Alaska Native. 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.

4 - Asian. 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.

I. Patient Information (continued)

Race (continued)

5 - Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

8 - Other. Report for those responses that are not covered by an above category. Provide the specific race for any case marked "Other."

Note:

Please note that race should be based on the patient's racial/ethnic origins, which is not necessarily the same as their country or place of origin.

Multi-racial can be indicated by checking "8-Other" and providing details in the "specify" field.

For White Hispanics, check "White." For Black Hispanics, check "Black."

ZIP Code

Variable Names: ZIPCODE, STATE

For patients residing in NYS, enter the ZIP Code of the primary residence. If the patient lives outside NYS, enter '99999' and print the name of the state or country where the patient resides in the space provided. If you enter a valid NYS ZIP Code, then the "State or Country" field should be left blank.

If the patient lives in a foreign country but is temporarily staying in the US during the pre-operative and post-operative time period, you must enter 99999 and print the name of the country that the patient is from. Do not enter the ZIP code of where the patient is staying in the US.

Hospital Admission Date

Variable Name: ADMIDATE

Enter the date that the current hospital stay began.

Note:

Report the date that the patient arrived at the hospital, even if it is not equal to the technical "admission date" (i.e., this date may be prior to official inpatient status).

I. Patient Information (continued)

Primary Payer

Variable Name: PAYER

Enter the primary source of payment for this hospital stay as shown in Appendix C.

Please note that Worker's Compensation, Family Health Plus, and Other Federal Programs are reported as code "19-Other."

Interpretation:

For "Medicaid Pending" code Primary Payer as "11-Self-Pay" and check the box "Medicaid."

For patients in prison, code Primary Payer as "19-Other."

Please note the difference between "07-Other Private Insurance Company" and "19-Other." Code "07" refers to a Private Insurance Company (also referred to as "Commercial" insurance) that is not listed elsewhere. Code "19" is any other type of insurance that is not given a code of its own (e.g. Corrections).

If the patient has Blue Cross and Medicare, code Medicare if there is no indication of which is primary.

Report a PPO (Preferred Provider Organization) as "06 – HMO/Managed Care."

If you know a patient has Medicare or Medicaid, but do not know if it is Fee for Service or Managed Care, code Fee for Service.

Medicaid

Variable Name: MEDICAID

Check this box if the patient has Medicaid that will provide payment for any portion of this hospital stay. If the patient's primary payer is Medicaid, check this box in addition to entering "03" or "04" under Primary Payer.

I. Patient Information (continued)

PFI of Transferring Hospital

Variable Name: TRANS_PFI

If the patient was transferred from another acute care facility, enter the PFI of the transferring hospital.

This element only needs to be completed for transfer patients.

A list of PFIs for cardiac diagnostic centers in NYS is provided in Attachment A. If transferred from a Veterans Administration hospital in NYS, enter 8888; if transferred from outside NYS, enter 9999. For patients transferred from another hospital in NYS, please see http://www.health.ny.gov/statistics/sparcs/reports/compliance/alpha_facilities.htm for a complete listing of NYS hospitals, including PFI.

Note:

PFI on the above website is listed as 6 digits. For purposes of cardiac reporting, PFI should always be four (4) numeric characters. Do not report the first two digits as provided on the linked website.

II. Procedural Information

REMINDER: Fill out a separate CSRS form for each cardiac surgery involving the heart or great vessels during the hospital admission.

Hospital That Performed Diagnostic Cath

Variable Name: CATHPFI

If the cardiac surgery was preceded by a diagnostic catheterization, enter the name and PFI number of the hospital in the spaces provided. If the catheterization was at a cardiac diagnostic center in NYS, enter its PFI Number from Attachment A; if done at a Veterans Administration hospital in NYS, enter 8888; if done outside NYS, enter 9999. If there was no diagnostic catheterization, leave this item blank.

Do not use this field to report any diagnostic procedure (e.g. CT) other than catheterization.

Note:

Diagnostic Catheterization Hospital name is included on the paper form for abstractor convenience. It is not part of the CSRS file structure.

II. Procedural Information (continued)

Date of Surgery

Variable Name: SURGDATE

Enter the date on which the cardiac surgical procedure was performed.

Clarification:

Report the date of first skin incision.

If there was no skin incision (procedure code 932) report the date of entry to the Operating Room or its equivalent.

Prior Surgery This Admission

Variable Names: PRIOSURG, PRIODATE

Check the appropriate box to indicate whether the patient had any reportable (form generating) cardiac operation prior to the present operation during the same hospital admission.

If “Yes” then the date of the most recent previous cardiac operation MUST be entered. This is very important because this date aids in combining multiple procedures that occurred on the same day in the proper order.

Cardiac Procedures This OR Visit

Variable Names: PROC1, PROC2, PROC3, PROC4, PROC5

Enter the 3-digit State Cardiac Advisory Committee Code (SCAC) from the procedure code list in Attachment D – Congenital and Acquired Cardiac Procedure Codes.

List up to 5 cardiac procedures performed during this operating room visit.

If there are more than 5, list the 5 most significant.

Note:

Please see Attachment D: Congenital and Acquired Cardiac Procedure Codes and “When to Complete an Adult CSRS Form” and “Guidance on Selecting Appropriate Codes” for additional coding instructions and scenarios for reporting procedure codes.

II. Procedural Information (continued)

Congenital Diagnosis

Variable Names: DIAG1, DIAG2, DIAG3

Indicate the three most significant congenital diagnoses for any patient with a congenital diagnosis.

The diagnosis codes in Attachment E are identical to those used for the Pediatric Cardiac Surgery Reporting System. Inclusion of this information will allow for meaningful evaluation of outcomes for adult congenital cardiac surgery.

Report in every case where a congenital diagnosis exists, even if there is no procedure for congenital disease during this operation.

Please note, some diagnoses listed in Attachment E are not congenital cardiac conditions. Those codes should not be used for this data element.

Coding Note:

Congenital Diagnosis Codes in Attachment E are aligned with those used for STS v2.9 data elements 6500, 6505, 6510.

Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.

Primary Physician Performing Operation

Variable Name: PHYSNUM

Enter the name and National Provider Id (NPI) number of the primary physician who performed the cardiac surgical procedure.

Interpretation: T

he primary physician should be the one who performed the majority of the cardiac procedure in that surgery.

The following is one of many possible examples: In a single trip to the OR, a radiofrequency ablation is performed by one surgeon and then a CABG by a second surgeon. The primary physician reported on the CSRS form should be the one who performed the CABG even though the ablation was performed before the CABG.

If a procedure includes both a cardiac surgeon and a cardiologist (e.g. hybrid revascularization, transcatheter valve replacement) report the cardiac surgeon as the primary physician for these purposes and also report the NPI number for the interventional cardiologist in the "Interventional Cardiologist" field.

If no surgeon participated in this procedure report 9999999999.

II. Procedural Information (continued)

Primary Physician Performing Operation (continued)

Note:

Physician name is included on the paper version of the data collection form for abstractor convenience. Physician name is not part of the required CSRS data structure.

Coding Note:

PHYSNUM definition is aligned with STS v2.9 data element 1960.

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Anesthesiologist (1)

Variable Name: ANESNUM1

Enter the name and National Provider Id (NPI) number of the responsible anesthesiologist at the start of the cardiac surgery.

If no anesthesiologist participated in this procedure report 8888888888.

Note:

Anesthesiologist name is included on the paper version of the data collection form for abstractor convenience. Anesthesiologist name is not part of the required CSRS data structure.

Anesthesiologist (2)

Variable Name: ANESNUM2

Enter the name and National Provider Id (NPI) number of the responsible anesthesiologist at the end of the cardiac surgery.

If no anesthesiologist participated in this procedure report 8888888888.

Note:

Anesthesiologist name is included on the paper version of the data collection form for abstractor convenience. Anesthesiologist name is not part of the required CSRS data structure.

II. Procedural Information (continued)

Interventional Cardiologist

Variable Name: CARDNUM

If the procedure is a Transcatheter Valve Replacement (procedure code 640-645) or PCI in same setting as CABG or Valve Surgery (procedure code 711), enter the name and National Provider Id (NPI) number of the interventional cardiologist participating in the case.

For procedure codes 640-645 and 711, if there was no interventional cardiologist participating enter code 0000000000. If a case does not include these procedure codes, then the cardiologist identifier is not collected.

Note:

Interventional cardiologist name is included on the paper version of the data collection form for abstractor convenience. Interventional cardiologist name is not part of the required CSRS data structure.

CABG Information

The following information must be completed for all CABG procedures.

Number of Distal Anastomoses with Venous Conduits

Variable Name: DIST_VEIN

Indicate the total number of distal anastomoses with venous conduits.

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.

Coding Note:

DIST_VEIN definition is aligned with STS v2.9 data element 2638.

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II. Procedural Information (continued)

Total Number of Distal Anastomoses with Arterial Conduits

Variable Name: DIST_ART

Indicate the total number of distal anastomoses with arterial conduits, whether IMA, GEPA, radial artery, etc.

Clarification:

Distal anastomosis refers to the connection between the bypass graft (conduit) and coronary artery. Record the total number of arterial anastomoses constructed using an arterial conduit connection to a coronary artery. Multiple distals can be constructed from any conduit. Capture each distal anastomosis.

Example: LIMA to LAD jumped to the diagonal equals two distal anastomoses.

Number of Distal Anastomoses using IMA Conduits

Variable Name: DIST_IMA

Indicate the total number of distal anastomoses done using Internal Mammary Artery (IMA) grafts.

Clarification:

More than one anastomosis can be constructed from each IMA; the IMA may be used as a pedicle graft or a free graft. A pedicle graft remains connected at its proximal origin and requires only a distal anastomosis.

Coding Note:

DIST_IMA definition is aligned with STS v2.9 data element 2628.

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Number of Distal Anastomoses using Radial Artery Conduits

Variable Name: DIST_RA

Indicate the total number of distal anastomoses done using radial artery grafts.

Clarification:

More than one anastomosis can be constructed from each radial artery.

Coding Note:

DIST_RA definition is aligned with STS v2.9 data element 2634.

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II. Procedural Information (continued)

Number of Distal Anastomoses using Other Arterial Conduits

Variable Name: DIST_OA

Indicate the number distal anastomoses that used arterial conduits, other than radial or IMA.

Example:

Inferior epigastric artery

Coding Note:

DIST_OA definition is aligned with STS v2.9 data element 2641.

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Internal Mammary Artery Used as Conduit

Variable Name: IMA_USED

Use the following codes to indicate which, if any, Internal Mammary Arteries were used for grafts.

- 1 Left
- 2 Right
- 3 Both
- 4 None

Clarification:

IMA may be used as a free graft or pedicle, in situ, graft. A pedicle graft remains connected at its proximal origin (in situ) and requires only a distal anastomosis; i.e. the internal mammary artery.

Coding Note:

IMA_USED definition is aligned with STS v2.9 data element 2629 and 2631.

Response mapping is required.

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II. Procedural Information (continued)

Primary Reason IMA Not Used

Variable Name: NOT_IMA

Use the following codes to indicate the primary reason an Internal Mammary Artery was not used (as documented in medical record).

- 2 Subclavian stenosis
- 3 Emergent or salvage procedure
- 4 Previous cardiac or thoracic surgery
- 5 No (Bypassable) LAD disease
- 6 Previous mediastinal radiation
- 7 Other

Clarification:

Response #5 - "No (Bypassable) LAD Disease" can include clean LAD, diffusely diseased LAD or other condition resulting in the LAD not being bypassed

Coding Note:

NOT_IMA definition is aligned with STS v2.9 data element 2627 however, the values associated with the response categories are different. This will require response mapping prior to submission.

Vessels Bypassed this OR Visit

Variable Name: BYP_LAD, BYP_RCA, BYP_LCX

Check all that apply to indicate if each vessel was bypassed this OR visit. Include all vessels bypassed, even branches.

Number of Radial Arteries Used for Grafts

Variable Name: NUM_RA

Indicate the number of radial arteries that were used for grafts.

II. Procedural Information (continued)

All Surgery Procedure Information

The following information is not limited to CABG surgery.

Minimally Invasive

Variable Name: MINI_INV

Check this box if the cardiac surgical procedure began through an incision other than a complete sternotomy or thoracotomy (less than 12 centimeters in length) regardless of whether the case converted to a standard incision or cardiopulmonary bypass was used.

Converted to Standard Incision

Variable Name: STND_INC

Check this box to indicate that the minimally invasive procedure was modified to a standard incision.

Note:

This box should never be checked unless Minimally Invasive is also checked.

Converted from Off Pump to On Pump

Variable Name: CONVERT

Check this box if the procedure began without the use of cardiopulmonary bypass, but prior to the completion of the procedure the patient was placed on pump. This should only be checked if the patient was placed on pump unexpectedly.

Entire Procedure Off Pump

Variable Name: ALL_OFF

Check this box if the cardiac procedure was performed entirely without the use of cardiopulmonary bypass.

II. Procedural Information (continued)

Reason PCI Performed During this Procedure

Variable Name: PCI_RSN

For cases that include a CABG and/or Valve procedure and a PCI as part of the same procedure, choose the response that best describes why the PCI was performed.

- 1 Treatment of pre-existing coronary artery disease (CAD)
- 2 Prophylactic
- 3 Required due to a complication

Notes:

Report this element whenever procedure code 711 (“PCI in the same setting as CABG or Valve Surgery”) is reported. Leave this item blank if procedure code 711 is not reported.

Cases reported with response category 1-Treatment of pre-existing CAD, must also be reported in PCIRS. Cases with other response categories are not reportable to PCIRS.

Ila. Peri-Operative Information

Skin Incision Time

Variable Name: SURGHOUR, SURGMIN

Indicate the time, to the nearest minute (using 24-hour clock), that the first skin incision, or its equivalent, was made.

Interpretation:

The intent of this field is to capture the time the first skin incision is made regardless of if the first incision is a harvest site incision or a sternal/ thoracotomy incision. If there was no skin incision (procedure code 932) report the date of entry to the Operating Room or its equivalent.

Coding Note:

SURGHOUR and *SURGMIN* definition is aligned with the time portion of STS V2.9 data element 2265.

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Ila. Peri-Operative Information (continued)

Skin Closure Time

Variable Name: CLOSEHOUR, CLOSEMIN

Capture the time (using 24-hour clock) to the nearest minute, that the skin incision was closed, or its equivalent.

Note:

This element refers to the time of the final incision closure prior to leaving the operating room.

If the patient leaves the operating room with an open incision, collect the time that the dressings were applied to the incision.

If the patient expires in the OR prior to skin closure, time of death should be reported in place of skin closure time.

Coding Note:

CLOSEHOUR and *CLOSEMIN* definition is aligned with the time portion of STS v2.9 data element 2270.

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Pre-Induction Blood Pressure

Variable Name: BP_SYS, BP_DIA

Enter the patient's blood pressure just prior to the induction of anesthesia as measured by any means.

Clarification:

For a patient who does not have "induction of anesthesia," for example a TAVR patient under monitored anesthesia care (MAC), report the pre-sedation blood pressure.

Ila. Peri-Operative Information (continued)

Post-Op Temperature

Variable Name: POST_TEMP

Report the patient's post-op temperature in degrees Celsius.

This should be the temperature on arrival at the next level of care after the operating room (e.g. Critical Care, PACU, Recovery, etc.).

If a pulmonary artery temperature is available upon arrival at the next level of care, report that value. Otherwise report temperature via other method.

Report temperature as 00.0 if no post-operative temperature is available (e.g. patient expires prior to arrival at next level of care).

Temperature Route

Variable Name: TEMP_RT

Report the route of post-operative temperature measurement using the following codes:

- 1 Pulmonary Artery
- 2 Rectal/Bladder
- 3 Nasopharyngeal
- 4 Tympanic
- 8 Other
- 9 Unknown

If Post-Op Temperature is reported as "00.0" because none is available (e.g. patient expires prior to arrival at next level of care), report Temperature Route as "9-Unknown."

Ila. Peri-Operative Information (continued)

Hematocrit

Variable Name: CRIT_OR, CRIT_LOW, CRIT_LST, CRIT

Report the patient's hematocrit at the following specified time periods.

- First recorded in the operating room
- Lowest on Cardiopulmonary Bypass - report as "00" or leave blank if entire procedure was "off-pump."
- Last on Cardiopulmonary Bypass - report as "00" or leave blank if entire procedure was "off-pump."
- Post-Op – value on arrival at next level of care after the operating room (e.g. Critical Care, PACU, Recovery, etc.). If no value is available (e.g. patient expires prior to arrival at next level of care) then report as "00" or leave blank.

Clarification:

Values from any source are acceptable (e.g. lab, Istat, ABG), however if available from multiple sources for the same time-frame, central lab values are preferred to point of care values.

If blood is drawn for "post-op" lab work just prior to leaving the operating room, that value may be reported for "Post-op - value on arrival at next level of care."

If only one Hematocrit value is recorded for the entire time that the patient is on Cardiopulmonary Bypass, then this value would be reported as both "Lowest" and "Last."

Pre-Op Beta Blocker Use

Variable Name: PRE_BETA

Use the following codes to indicate pre-op beta blocker use or contraindication.

1 Yes - The patient received beta blockers within 24 hours prior to incision in the OR.

2 Contraindicated - Beta blocker was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, or physician assistant.

3 No - The patient did not receive beta blockers within 24 hours prior to incision in the OR and there is no documented contraindication for beta blockers.

Coding Note: *PRE_BETA* definition is aligned with STS v2.9 data element 1030, however the response values must be mapped. CSRS response 1 = STS response 1; CSRS 2 = STS 3; CSRS 3 = STS 2.

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Ila. Peri-Operative Information (continued)

Extubation at 24 Hours – Report Only for CABG Patients

Variable Name: EXTUBATE

Use the following codes to indicate extubation at 24 hours post-op.

1 Yes - The patient was extubated at 24 hours post-op.

2 Contraindicated - The patient was not extubated at 24 hours post-op due to a contraindication. Contraindications include the following: myocardial dysfunction; valvular heart disease; active systemic illness; respiratory disease; neuropsychiatric disease or problems with communication secondary to language. This would include stroke (new neurological deficit) and neuropsychiatric state (paranoia, confusion, dementia).

3 Neither - The patient was not extubated at 24 hours post-op and there was no contraindication as defined above.

Interpretation: Post-op is defined as starting when the patient leaves the actual procedure room where the cardiac operation occurred.

Post-Op Beta Blocker Use - Report Only for CABG Patients

Variable Name: PO_BETA

1 Yes - The patient received beta-blockers within 24 hours post-op.

2 Contraindicated - The patient did not receive beta-blockers with 24 hours post-op due to a contraindication. Contraindications include the following: allergy, bradycardia (heart rate less than 60 bpm) and not on beta blockers, second or third degree heart block on ECG on arrival or during hospital stay and does not have a pacemaker, systolic blood pressure less than 90 mmHg and not on beta blockers, or other reasons documented by a physician, nurse practitioner, or physician's assistant in the medical chart.

3 Neither- The patient did not receive beta-blockers within 24 hours post-op and there was no contraindication as defined above.

Interpretation: Post-op is defined as starting when the patient leaves the actual procedure room where the cardiac operation occurred.

Ila. Peri-Operative Information (continued)

Intra-Operative Blood Transfusion

Variable Name: TRANSFUS

Indicate if packed red blood cells were transfused intraoperatively. Do not include autologous, cell-saver, pump-residual or chest tube recirculated blood. Intraoperatively is defined as any blood started inside of the OR.

Coding Note:

CSRS "TRANSFUS" is a Yes/No variable with a definition such that when STS element 2520 IBdRBCU is ≥ 1 then TRANSFUS should be "checked" (i.e. reported as 1 for text file upload).

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Glucose Control Protocol

Variable Name: GLUCOSE

Check this box if a glucose control protocol was used for this patient.

Interpretation:

This element is referring to a post-op glucose control protocol. These may be initiated in the pre- or intra-operative period but continued post-op.

Expected documentation would be an order in the patient's chart indicating use of protocol or evidence that there are standing orders for all patients to be on a protocol.

III. Pre-Op Surgical Risk Factors

Surgical Priority

Variable Name: PRIORITY

Indicate the clinical status of the patient prior to entering the operating room.

- 1 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.
- 2 Urgent: Procedure required during same hospitalization in order to minimize chance of further clinical deterioration. Examples include but are not limited to: Worsening, sudden chest pain; CHF; acute myocardial infarction; anatomy; IABP; unstable angina with intravenous nitroglycerin or rest angina.
- 3 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.
- 4 Emergent Salvage: The patient is undergoing CPR enroute to the OR or prior to anesthesia induction or has ongoing ECMO to maintain life.

Coding Note:

PRIORITY is aligned with STS v2.9 element 1975.

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Height

Variable Name: HEIGHT

Enter the patient's height in centimeters (cm).

Coding Note:

HEIGHT definition is consistent with STS v2.9 data element 330.

Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.

Weight

Variable Name: WEIGHT

Indicate the weight of the patient, in kilograms (kg), closest to the date of the procedure.

Coding Note:

WEIGHT definition is consistent with STS v2.9 element 335.

Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.

III. Pre-Op Surgical Risk Factors (continued)

Stress Test Findings

Variable Name: *STRS_RES*

Use the codes below to indicate the stress test results if a stress test was performed in the last 6 months.

1. Low Risk – (<1% annual risk of death or MI)

Select if any of the following stress test findings are documented:

- Low risk treadmill score (score ≥ 5) or no new ST segment changes or exercise induced chest pain symptoms; when achieving maximal levels of exercise.
- Normal or small myocardial perfusion defect at rest or with stress encumbering <5% of the myocardium
- Normal stress or no change of limited resting wall motion abnormalities during stress.

2. Intermediate Risk (1% to 3% annual death or MI)

Select if any of the following stress test findings are documented:

- Mild/moderate resting LV dysfunction (LVEF 35% to 49%) not readily explained by noncoronary cause
- Resting perfusion abnormalities in 5% to 9.9% of the myocardium in patients without a history or prior evidence of M
- ≥ 1 mm of ST-segment depression occurring with exertional symptoms.
- Stress-induced perfusion abnormalities encumbering 5% to 9.9% of the myocardium or stress segmental scores (in multiple segments) indicating 1 vascular territory with abnormalities but without LV dilation
- Small wall motion abnormality involving 1 – 2 segments and only 1 coronary bed

III. Pre-Op Surgical Risk Factors (continued)

Stress Test Findings (continued)

3. High Risk (>3% annual death or MI)

Select if any of the following stress test findings are documented:

- Severe resting LV dysfunction (LVEF <35%) not readily explained by noncoronary cause
- Resting perfusion abnormalities $\geq 10\%$ of the myocardium in patients without prior history or evidence of M
- Stress ECG findings including $\geq 2\text{mm}$ of ST-segment depression at low workload or persisting into recovery, exercise-induced ST-segment elevation, or exercise induced VT/VF.
- Severe stress induced LV dysfunction (peak exercise induced LVEF <45% or drop in LVEF with stress $\geq 10\%$).
- Stress induced perfusion abnormalities encumbering $\geq 10\%$ myocardium or stress segmental scores indicating multiple vascular territories with abnormalities.
- Stress induced LV dilation
- Inducible wall motion abnormality (involving >2 segments or 2 coronary beds)
- Wall motion abnormality developing at low dose of dobutamine (≤ 10 mg/kg/min) or at a low heart rate (<120 beats / min).

4. Positive, Risk Unavailable

- The study was “positive” but the risk or extent of ischemia was not documented.

5. Indeterminate

- The results of the study were uninterpretable. They cannot be considered positive or negative.

6. Unavailable

- A study was performed but the results of the study are not available

9 Not Done/ Unknown

- No stress test/imaging study was performed within the past 6 months or it is not known if a stress test/imaging study was performed in the past 6 months.

Clarification:

“Normal” or “Negative” stress test should be reported under 1 – Low risk.

If findings were in more than one risk level, select the highest level of risk indicated.

Note:

Inclusion of stress test reports in the medical record is encouraged to allow for accurate and complete reporting of these data elements.

III. Pre-Op Surgical Risk Factors (continued)

Ejection Fraction and Measure

Variable Names: EJEC_FRA, MEASURE

Record the pre-operative ejection fraction taken closest to, but before, the start of the cardiac procedure.

If an ejection fraction is unavailable, enter "0" and then enter "9 – Unknown" for the measure.

Indicate how the ejection fraction was measured using one of the following:

- 1 LV Angiogram
- 2 Echocardiogram
- 3 Radionuclide Studies
- 4 Transesophageal Echocardiogram (TEE), this includes intra-operative
- 8 Other
- 9 Unknown

Note:

Intra-operative direct observation of the heart is NOT an adequate basis for a visual estimate of the ejection fraction.

Interpretation:

Intra-operative TEE is acceptable, if no pre-operative ejection fraction is available. Any ejection fraction that is described as "Normal" in the medical record should be considered 55%.

Any cases with a missing or unusual ejection fraction may be sent back during quarterly and annual data validation to verify accuracy of this data element.

Anginal Classification within 2 Weeks

Variable Name: CCS_CLAS

Indicate the patient's anginal classification or symptom status within the past 2 weeks prior to surgery. The anginal classification or symptom status is classified as the highest grade of angina or chest pain by the Canadian Cardiovascular Angina Classification System (CCA).

- 1 CCA I - Ordinary physical activity does not cause angina; for example, walking or climbing stairs, angina occurs with strenuous or rapid or prolonged exertion at work or recreation.
- 2 CCA II - Slight limitation of ordinary activity; for example, angina occurs walking or stair climbing after meals, in cold, in wind, under emotional stress or only during the few hours after awakening, walking more than two blocks on the level or climbing more than one flight of ordinary stairs at a normal pace and in normal conditions.

III. Pre-Op Surgical Risk Factors (continued)

Anginal Classification within 2 Weeks (continued)

- 3 CCA III - Marked limitation of ordinary activity; for example, angina occurs walking one or two blocks on the level or climbing one flight of stairs in normal conditions and at a normal pace.
- 4 CCA IV - Inability to carry on any physical activity without discomfort - angina syndrome may be present at rest.
- 8 No Symptoms, No Angina - The patient has no symptoms, no angina.

Notes: If this is a subsequent episode of care (within 2 weeks), code the most recent Anginal Classification

When the only chest pain the patient experienced is during an exercise stress test, code no angina, since this system is designed to classify angina during activities of daily living. Do not capture angina that only occurred during diagnostic testing.

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

III. Pre-Op Surgical Risk Factors (continued)

Cardiac Symptoms at Time of Admission

Variable Name: SYMP_ADM

Indicate the patient's cardiac symptoms at the time of admission using the codes below.

- 1 No Symptoms - No Symptoms, no angina.
- 2 Stable Angina - Angina without a change in frequency or pattern for the prior 6 weeks. Angina is controlled by rest and/or oral or transcutaneous medications.
- 3 Unstable Angina - There are three principal presentations of unstable angina:
 - a. Rest angina (occurring at rest and prolonged, usually >20 minutes);
 - b. New-onset angina (within the past 2 months, of at least Canadian Cardiovascular Society Class III severity); or
 - c. 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).
- 4 Non-ST Elevation MI (Non- STEMI) - The patient was hospitalized for a non-ST elevation myocardial infarction (NSTEMI) as documented in the medical record. NSTEMIs are characterized by the presence of both criteria:
 - a. Cardiac biomarkers (creatinine kinase-myocardial band, Troponin T or I) exceed the upper limit of normal according to the individual hospital's laboratory parameters with a clinical presentation which is consistent or suggestive of ischemia. ECG changes and/or ischemic symptoms may or may not be present.
 - b. Absence of ECG changes diagnostic of a STEMI (see STEMI).
- 5 ST Elevation MI (STEMI) – The patient presented with a ST-elevation myocardial infarction (STEMI) or its equivalent as documented in the medical record. STEMI's are characterized by the presence of both criteria:
 - a. ECG evidence of STEMI: New or presumed new ST-segment elevation or new left bundle branch block not documented to be resolved within 20 minutes. ST-segment elevation is defined by new or presumed new sustained ST-segment elevation at the J-point in two contiguous electrocardiogram (ECG) leads with the cutoff points: ≥ 0.2 mV in men or ≥ 0.15 mV in women in leads V2-V3 and/or ≥ 0.1 mV in other leads and lasting greater than or equal to 20 minutes. If no exact ST elevation measurement is recorded in the medical chart, physician's written documentation of ST elevation or Q waves is acceptable. If only one ECG is performed, then the assumption that the ST elevation persisted at least the required 20 minutes is acceptable. Left bundle branch block (LBBB) refers to new or presumed new LBBB on the initial ECG.

III. Pre-Op Surgical Risk Factors (continued)

Cardiac Symptoms at Time of Admission (cont'd.)

- b. Cardiac biomarkers (creatinine kinase-myocardial band, Troponin T or I) exceed the upper limit of normal according to the individual hospital's laboratory parameters with a clinical presentation which is consistent or suggestive of ischemia. Note: For purposes of the Registry, ST elevation in the posterior chest leads (V7 through V9), or ST depression that is maximal in V1-3, without ST-segment elevation in other leads, demonstrating posterobasal myocardial infarction, is considered a STEMI equivalent and qualifies the patient for reperfusion therapy.
- 6 Angina 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 to be 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. For the patient with diabetes who presents with "silent angina", code anginal equivalent.
- 7 Other - Presentation/symptom not listed above (e.g., aortic dissections, sudden death, heart block, arrhythmia, syncope or heart failure).

Clarification: There must be documentation that symptoms are anginal equivalent to code response 6-Anginal Equivalent.

Coding Note: *SYMP_ADM* definition is aligned with STS v2.9 data element 895. *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

Cardiac Symptoms at Time of Surgery

Variable Name: SYMP_SURG

Indicate the patient's cardiac symptoms at the time of surgery using the codes as defined above for "Cardiac Symptoms at Time of Admission."

Clarification:

This element captures changes between admission and surgery; whether a patient improves or deteriorates. If the patient did not improve or deteriorate between admission and surgery, the code will be the same.

Patients admitted with MI, who are in the hospital for more than 7 days before surgery should report most recent symptoms for Symptoms at Time of Surgery.

Coding Note:

SYMP_SURG definition is aligned with STS v2.9 data element 900. *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

III. Pre-Op Surgical Risk Factors (continued)

Creatinine

Variable Name: CREATININE

Indicate the creatinine level closest to the date and time of surgery but prior to anesthetic management (induction area or operating room).

Interpretation:

Acceptable documentation may include that from an outpatient record.

If no preoperative creatinine value is available, enter 00.0.

Coding Note:

CREATININE definition is aligned with STS v2.9 data element 585.

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Anti-Anginal Medication Within 2 Weeks

Variable names: MED_BB, MED_CA, MED_NIT, MED_RAN, MED_OTH

Indicate if the patient was taking any of the following agents to treat anginal symptoms within the past two weeks. Check all that apply.

- Beta-Blockers
- Calcium Channel Blockers
- Long Acting Nitrates
- Ranolazine
- Other

Clarification:

Do not report if the patient was given sublingual, IV, or short acting form of the medications.

Do not report if the patient has been prescribed the medication but is known to be not taking it.

Report if the patient was started on an oral form of the medication after admission but prior to this surgical procedure.

Report if this medication was prescribed for this patient, but you are unsure it has been prescribed specifically to treat anginal symptoms.

Nitro paste and nitro patch are considered Long Acting Nitrates.

“Other” excludes short acting anti-anginal medications such as nitroglycerin sublingual tablets or spray that is used to relieve an acute episode of chest pain.

III. Pre-Op Surgical Risk Factors (continued)

Vessels Diseased

Variable Name: LMT, PROX_LAD, MID_LAD, RCA, LCX

For each diseased vessel, check the appropriate box to indicate the percent diameter stenosis as determined by angiography. Include all vessels diseased, even branches.

Interpretation:

This section must be completed for all CABG cases. If this information is available for other procedures, please indicate the vessels diseased, otherwise leave blank.

If the diseased segment of the native vessel is bypassed by an open artery or vein graft, do not code as diseased. This vessel is revascularized.

Use the ranges listed below when the medical record describes the percent stenosis in the following ways:

MILD	= < 50%
MODERATE	= 50-69%
SEVERE	= > 70%

If a vessel or branch is described as having "Mild" stenosis then the vessel would NOT be coded as diseased, since we only code 50-100% stenosis.

If the medical record reports the range "40-50%" stenosis, then DO NOT CODE as diseased.

If the medical record reports the range "60-70%" stenosis, then code 50-69%.

Disease of the Major Diagonal should be reported with Mid/Distal LAD. The Ramus Intermediate should be coded as the Diagonal or Marginal.

Always take the highest stenosis reported for a vessel. If the medical record reports the Proximal RCA with a 70% lesion and the Distal RCA with a 50% you should code the RCA as 70-100%, since the Proximal RCA has a 70% lesion.

If the medical record only has documentation that states the LAD was stenosed then code the Mid LAD and not the Proximal LAD.

III. Pre-Op Surgical Risk Factors (continued)

Minimal Luminal Area

Variable Name: LM_MLA, PLAD_MLA, MLAD_MLA, RCA_MLA, LCX_MLA

Report the minimal luminal area in mm² as found by IVUS or OCT. If IVUS and OCT were not used, leave blank.

Fractional Flow Reserve

Variable Name: LM_FFR, PLAD_FFR, MLAD_FFR, RCA_FFR, LCX_FFR

Indicate the fractional flow reserve ratio (FFR) or instantaneous wave-free ratio (iFR).

Note:

If FFR and iFR were not done, leave blank.

If both FFR and iFR were done, report FFR values.

MLA Measurement Type

Variable Name: MLA_TYPE

If minimal luminal area (MLA) is reported, indicate if the measurements were obtained from IVUS or OCT evaluation.

1 – IVUS

2 – OCT

Note:

If no MLA is reported, leave this field blank or enter 0.

Flow Measurement Type

Variable Name: FLW_TYPE

If fractional flow reserve ratio (FFR) or Instantaneous wave-free ratio (iFR) is reported, indicate if the measurements were obtained from FFR or iFR evaluation.

1 – FFR

2 – iFR

Note:

If no FFR/iFR is reported, leave this field blank or enter 0.

If both FFR and iFR were used, check FFR and report the values from FFR.

III. Pre-Op Surgical Risk Factors (continued)

Valve Disease - This section is required for valve patients. If the information is available for other patients, please report it.

Valve Disease

Variable Names: STEN_AOR, STEN_MIT, STEN_TRI, INCO_AOR, INCO_MIT, INCO_TRI

Enter an assessment of the degree of stenosis or incompetence (acute or chronic) for each valve (Aortic, Mitral, Tricuspid). Both lines should be completed for all valve patients.

Enter the following values for each valve to indicate the degree of stenosis or incompetence:

- 0 None
- 1 Mild
- 2 Moderate
- 3 Severe

Moderate or Severe Stenosis – Aortic, Mitral, or Tricuspid: Should be demonstrated by appropriate imaging technique, echocardiography, or hemodynamic measurement during cardiac catheterization or operation.

Moderate or Severe Aortic Incompetence: Should be demonstrated by aortography or by pre-op or intraoperative echocardiography.

Moderate or Severe Mitral Incompetence: Should be demonstrated by left ventriculography or by pre-op or intraoperative echocardiography.

Moderate or Severe Tricuspid Incompetence: Should be demonstrated by physical examination or by pre-op or intraoperative echocardiography.

Clarification:

Use pre-incision intra-operative TEE results if either: a) these findings changed the planned surgery or b) no other values are available. Otherwise, use the most recent values from 6 months prior to surgery up to OR entry.

Choose the **highest** level of valve dysfunction when there are differences in interpretation of the most recent study.

Capture when available, even if patient is not scheduled for valve repair and/or replacement.

Report findings of “Trace” or “Trivial” as “None.”

If a report shows “mild to moderate” disease, it would be appropriate to code “moderate.”

III. Pre-Op Surgical Risk Factors (continued)

Mitral Regurgitation Type

Variable names: SEC_MR, PRIME_MR

For patients with mitral valve regurgitation, indicate the presence of Secondary MR and/or Primary MR.

Clarification:

“Primary” MR involves pathology of valve component(s), i.e. leaflets, chords, papillary muscle, annulus. This may be evidenced by mitral valve prolapse and associated with Barlow’s Valve, Fibroelastic deficiency disease, infective endocarditis, connective tissue disorders, rheumatic heart disease, cleft MV, or Radiation Heart Disease. May also be called “degenerative” disease.

In “Secondary” MR, the mitral valve is usually normal and LV dysfunction is caused by coronary artery disease, myocardial infarction or idiopathic myocardial disease.

Reporting Note:

Report only when “Mitral Incompetence” is reported. (INCO_MIT = 1, 2, 3)

This data element may be skipped for patients with a mitral valve prosthesis in place prior to the current cardiac surgery.

Etiology for Primary MR

Variable Names: MR_DEGEN, MR_RHEUM, MR_ENDO, MR_CALC, MR_OTH

For patients with Primary Mitral Regurgitation, indicate the etiology by checking all that apply.

- Degenerative
- Rheumatic
- Endocarditis
- Calcified
- Other

Reporting Note:

Report only when the patient has Primary Mitral Regurgitation (PRIME_MR = 1).

This data element may be skipped for patients with a mitral valve prosthesis in place prior to the current cardiac surgery.

III. Pre-Op Surgical Risk Factors (continued)

Leaflet Involvement for Primary MR

Variable Name: MR_LEAF

For patients with Primary Mitral Regurgitation, indicate which leaflets are involved.

- 1 Posterior
- 2 Anterior
- 3 Both

Reporting Note:

Report only when the patient has Primary Mitral Regurgitation (PRIME_MR = 1).

This data element may be skipped for patients with a mitral valve prosthesis in place prior to the current cardiac surgery.

Valve Symptoms

Variable Name: VALVE_SYMP

For patients with any valve disease, indicate their symptom status.

- 1 Asymptomatic
- 2 Symptomatic

Symptomatic patients are those with symptoms believed to be related to their valve disease such as: decreased exercise tolerance, exertional dyspnea, or heart failure symptoms.

Five-Meter Walk Test

Variable Name: FIVE_WALK1, FIVE_WALK2, FIVE_WALK3

For patients undergoing transcatheter aortic valve replacement or surgical aortic valve replacement, if the five-meter walk test was performed within 90 days of the procedure, report the time the patient took to walk 5 meters for each of the three tests.

Note:

This may not be available for all TAVR and SAVR patients but should be reported when available.

End “Valve Disease Section” - Report Additional Risk Factors for all cases

III. Pre-Op Surgical Risk Factors (continued)

0. None

Variable Name: NORISK

Report if none of the pre-operative risk factors listed below are present.

1. Previous CABG - Patent Grafts

Variable Name: PAT_GRAFT

Indicate if, prior to this cardiac surgery, the patient has undergone CABG and currently has one or more patent grafts.

Include any surgeries that occurred prior to this one including those earlier in the current admission.

Note:

Check this box if there are any patent grafts, even if there are also occluded grafts. Only check box 1 or box 1a, not both.

If the patient has a history of CABG and a history of other cardiac surgery, you should report both risk factors.

1a. Previous CABG – No Patent Grafts

Variable Name: OTH_CABG

Indicate if, prior to this cardiac surgery, the patient has previously undergone CABG and has no patent grafts.

Include any surgeries that occurred prior to this one including those earlier in the current admission.

Note:

Check this box only if there are no patent grafts. Only check box 1 or box 1a, not both.

If the patient has a history of CABG and a history of other cardiac surgery, you should report both risk factors.

III. Pre-Op Surgical Risk Factors (continued)

2a. Previous Valve Surgery / Intervention

Variable Name: PRE_VALV

Indicate if, prior to this cardiac surgery, the patient has previously undergone surgery or catheter-based intervention for valve repair or replacement.

Note:

It is acceptable to report this risk factor as well as a risk factor for previous CABG surgery and/or other previous cardiac surgery.

2. Any Other Previous Cardiac Surgery

Variable Name: OTH_SURG

Indicate if prior to this OR visit the patient has had any cardiac surgery other than CABG or valve repair / replacement.

Note:

Do not include catheter-based interventions.

If the patient has previously had CABG and/or valve surgery as well as another cardiac surgery, report this risk factor in addition to the appropriate Previous CABG and/or Valve risks.

4. - 6. Previous MI (Most Recent)

Variable Names: PREMILT6, PREMI623, PREMIDAY

If the patient had one or more myocardial infarctions before surgery, report the length of time since the most recent MI. Timing should be from the onset of symptoms to the start of the surgery. If the exact time that the symptoms started is not available in the medical record, every effort should be made to create a close estimate based on available documentation.

The diagnosis of Acute Coronary Syndrome (ACS) in the medical record is not sufficient to code risk factors 4 – 6. There must be documentation of a myocardial infarction.

If less than 6 hours, check box 4.

If 6-23 hours, check box 5.

If 24 hours or more, enter the number of days in the space provided next to 6.

If 21 days or more, enter 21.

III. Pre-Op Surgical Risk Factors (continued)

64. Neurological Event

Variable Name: CVD_EVENT

Use the following codes to indicate if the patient has a history of a neurological event:

- 1 Stroke
- 2 TIA, without 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.

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.

If no history of stroke or TIA, enter 0 or leave blank.

Coding Note: *CVD_EVENT* definition is aligned with STS v2.9 data element 530 and 540 according to the following mapping instructions. If STS Seq 530 = 1 then *CVD_EVENT* = 1; If STS Seq 540 = 1 and STS Seq 530 ≠ 1 then *CVD_EVENT* = 2. *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

65. Arterial Imaging Test

Variable Name: CVD_IMG

Use the codes below to indicate if a noninvasive or invasive arterial imaging test demonstrated ≥50% stenosis of any of the major extracranial or intracranial vessels to the brain.

- 1 50-79% occlusion
- 2 >79% occlusion

If no findings in this range, or no testing performed, enter 0 or leave blank.

66. Cervical or Cerebrovascular Procedure

Variable Name: CVD_PROC

Check the box to indicate if the patient has previous cervical or cerebral artery surgery or percutaneous intervention

Note: It is acceptable to report cerebrovascular aneurysm clipping or coiling for this risk factor

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III. Pre-Op Surgical Risk Factors (continued)

67. Cardiogenic Shock

Variable Name: SHOCK_COND

Indicate if, in the immediate pre-operative period, the patient was in cardiogenic shock as defined below.

Cardiogenic shock is defined as an episode of systolic blood pressure <90 mmHg and/or cardiac index < 2.2 L/min /m² determined to be secondary to cardiac dysfunction and the requirement for parenteral inotropic or vasopressor agents or mechanical support (e.g., IABP, extracorporeal circulation, VAD) to maintain blood pressure and cardiac index above those specified levels.

Please see clarification presented under “Refractory Cardiogenic Shock.”

68. Refractory Cardiogenic Shock

Variable Name: SHOCK_REFR

Indicate if, in the immediate pre-operative period, the patient was in refractory cardiogenic shock as defined below.

Refractory cardiogenic shock is defined as an episode of systolic blood pressure <80 mm Hg and/or cardiac index < 2.0 L/min /m² determined to be secondary to cardiac dysfunction despite the use of parenteral inotropic or vasopressor agents or mechanical support (e.g., IABP, extracorporeal circulation, VADs).

Cases with Refractory Cardiogenic Shock will be excluded from analysis.

Clarification: Applies to Cardiogenic Shock and Refractory Cardiogenic Shock.

Transient episodes of hypotension reversed with IV fluid or atropine do not constitute cardiogenic shock or refractory cardiogenic shock.

For these purposes, the immediate pre-operative period is defined as the period just prior to anesthesia taking responsibility for the patient.

Ongoing CPR warrants the coding of Refractory Cardiogenic Shock.

If the patient has an IABP, the augmented or non-augmented systolic BP < 80 mmHg may be used as support for coding Refractory Cardiogenic Shock.

If the patient is Ventricular Assist Device (VAD) dependent then Refractory Shock can be coded. For these purposes ECMO is treated like a VAD. Use of Impella is treated like a VAD when there is evidence prior to insertion that the hemodynamic criteria above are met.

III. Pre-Op Surgical Risk Factors (continued)

10. Peripheral Vascular Disease

Variable Name: PERIPH

Angiographic demonstration of at least 50% narrowing in a major aortoiliac or femoral/popliteal vessel, previous surgery for such disease, absent femoral or pedal pulses, or the inability to insert a catheter or intra-aortic balloon due to iliac aneurysm or obstruction of the aortoiliac or femoral arteries. Ankle-Brachial Index < 0.9 is also acceptable documentation.

Examples:

Peripheral Vascular Disease	Code	Do Not Code
1. Tortuosity of the vessel alone		X
2. Tortuosity of the vessel with an inability to insert a catheter	X	
3. Abdominal aortic aneurysm (AAA)	X	
4. Aneurysm in the ascending or descending aorta	X	
5. Absence of femoral pulse on either the right or the left	X	
6. Diminished femoral pulse on either right or left or both		X
7. Claudication		X
8. A negative popliteal pulse alone (1+1- or 1-1+)		X
9. Palpable dorsalis pedis and posterior tibial pulses		X
10. If pulses are non-palpable, but are dopplerable	X	
11. Inability to insert a catheter or IABP in femoral arteries	X	
12. Amputated toes, necrotic toes, gangrene of the foot in the absence of other acceptable criteria		X
13. Renal artery with significant stenosis	X	
14. Subclavian artery with significant stenosis	X	
15. Iliac artery aneurysm	X	
16. Infrarenal aortic dissection	X	
17. "Moderate" subclavian artery stenosis with no % documented		X

III. Pre-Op Surgical Risk Factors (continued)

18. Heart Failure, Current

Variable Name: CHF_CUR

Within 2 weeks prior to the procedure, the patient has a clinical diagnosis of heart failure, and symptoms requiring treatment for heart failure.

Note: Physician diagnosis of heart failure may be based on one of the following:

- Paroxysmal nocturnal dyspnea (PND)
- Dyspnea on exertion (DOE) due to heart failure
- Chest X-Ray showing pulmonary congestion

Documentation must include the presence of a diagnosis of heart failure, evidence of symptoms, and treatment for heart failure.

Clarification: See “Heart Failure, Past.”

19. Heart Failure, Past

Variable Name: CHF_PAST

Between 2 weeks and 6 months prior to the procedure, the patient has a clinical diagnosis/ past medical history of heart failure and ongoing treatment for heart failure.

Note: Physician diagnosis of heart failure may be based on one of the following:

- Paroxysmal nocturnal dyspnea (PND)
- Dyspnea on exertion (DOE) due to heart failure
- Chest X-Ray showing pulmonary congestion

Documentation must include a diagnosis of heart failure and evidence of treatment for heart failure. Patient’s clinical status may be compensated.

Clarification (Applies to Heart Failure Current and Past):

The diagnosis component may be documented with a variety of terms such as: congestive heart failure (CHF), heart failure (HF), systolic heart failure, diastolic heart failure, heart failure with reduced EF (HFrEF), heart failure with preserved EF (HFpEF).

Renal dialysis is acceptable for the treatment component of this definition, *if there is documentation that the patient is receiving dialysis as a treatment for heart failure.*

Documentation of NYHA Class III or IV may fulfill both the diagnosis and symptoms components of this definition. Documentation of a lower NYHA class may fulfill the symptoms component, but there must also be documentation of a heart failure diagnosis.

It is acceptable to report both Heart Failure Current and Past.

III. Pre-Op Surgical Risk Factors (continued)

20. Malignant Ventricular Arrhythmia

Variable Name: MAL_VENT

Recent (within the past 14 days) sustained ventricular tachycardia requiring electrical defibrillation or conversion with intravenous anti-arrhythmic agents or ventricular fibrillation requiring electrical defibrillation. Excludes V-Tach or V-Fib occurring within 6 hours of the diagnosis of a myocardial infarction and responding well to treatment.

Interpretation:

Sustained arrhythmia is that which continues until something is done to stop it; it does not resolve on its own.

For patients within 6 hours of the diagnosis of an MI who are experiencing V-Tach or V-Fib that otherwise meets the above criteria, you may still code this risk factor if the arrhythmia is not responding well to treatment. That is, if it continues despite electrical defibrillation or conversion with intravenous anti-arrhythmic agents.

If the patient has an AICD that is documented to have fired then CODE, unless the patient is within 6 hours of the diagnosis of an MI.

Regular oral medication for a ventricular arrhythmia is NOT sufficient reason to code the risk factor.

III. Pre-Op Surgical Risk Factors (continued)

21. Chronic Lung Disease

Variable name: COPD

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

- 1 No
- 2 Mild - FEV₁ 60% to 75% of predicted, and/or on chronic inhaled or oral bronchodilator therapy.
- 3 Moderate - FEV₁ 50% to 59% of predicted, and/or on chronic oral steroid therapy aimed at lung disease.
- 4 Severe - FEV₁ < 50% predicted, and/or Room Air pO₂ < 60 or Room Air pCO₂ > 50.

Interpretation:

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.

Chronic lung disease can include patients with chronic obstructive pulmonary disease, chronic bronchitis, or emphysema. Patients with asthma or seasonal allergies are not considered to have chronic lung disease.

Acceptable documentation for “severe” includes pO₂ < 60 or pCO₂ > 50 on supplemental oxygen as well as on room air.

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

Bedside spirometry may be used to identify the severity of chronic lung disease when there is a diagnosis of COPD or other qualifying chronic lung disease in the patient’s medical record. Findings on a full PFT or bedside spirometry such as “moderate obstructive defect” are not a diagnosis of chronic lung disease. For all cases, there must be a diagnosis of pre-procedure chronic lung disease to report this risk factor.

Documentation Note:

Diagnosis must be present in the medical record. This information must be included with any medical record documentation submitted for review of this risk factor.

III. Pre-Op Surgical Risk Factors (continued)

23. Extensive Aortic Atherosclerosis

Variable Name: CALCAORT

Ascending, transverse, and/or descending aortic atherosclerosis marked by either extensive calcification or luminal atheroma such that the intended surgical procedure is altered.

Interpretation:

It is necessary to demonstrate that the intended surgical procedure is altered. An operative note that dictates a change in the intended surgical procedure (i.e. clamp moved, procedure performed off pump) is acceptable documentation.

Documentation of the advanced aortic pathology by either transesophageal echocardiography, epi aortic echocardiography, intravascular ultrasound, magnetic resonance angiography or other imaging modality performed in the perioperative period should be available either by official report or dictated in the operative notes.

Calcium in aortic arch on chest X-ray is not enough to code this risk.

Note:

Extensive evaluation **does not** represent a change in the intended surgical procedure.

24. Diabetes

Variable Name: DIABETES

Indicate whether patient has a history of diabetes diagnosed and/or treated by a healthcare provider.

Interpretation: The definition below is informational and data coordinator is not expected to diagnose diabetes.

The American Diabetes Association criteria include documentation of the following:

- 1 A1c $\geq 6.5\%$; or
- 2 Fasting plasma glucose ≥ 126 mg/dl (7.0 mmol/l); or
- 3 Two-hour plasma glucose ≥ 200 mg/dl (11.1 mmol/l) during an oral glucose tolerance test; or
- 4 In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg/dl (11.1 mmol/l)

Clarification:

Exclusions are steroid induced hyperglycemia and gestational (transient), without elevated HbA1c and/or treatment.

III. Pre-Op Surgical Risk Factors (continued)

24. Diabetes (cont'd.)

Not all patients receiving diabetic medications are considered diabetic. It is important to remember, some medications used to treat diabetes may be used to treat other conditions.

A hemoglobin A1c value of $\geq 6.5\%$, collected within 3 months prior to surgery, is acceptable to use for documentation of diabetes.

Coding Note:

DIABETES definition is aligned with STS V2.9 data element 360.

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24a. Diabetes Therapy

Variable Name: DM_TRT

Indicate the patient's diabetes control method (long-term management) as presented on admission. Patients placed on a pre-procedure diabetic pathway of insulin drip at admission but whose diabetes was controlled by diet or oral methods are not coded as being treated with insulin.

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

1 None - No treatment for diabetes.

2 Diet only - Treatment with diet only

3 Oral - Treatment with oral agent (includes oral agent with or without diet treatment)

4 Insulin - Insulin treatment (includes any combination with insulin)

6 Other subcutaneous medication - Other subcutaneous medications (such as GLP-1 agonists; Byetta, Bydureon, Victoza, Symlin)

5 Other - Other adjunctive treatment, non-oral/insulin/diet

7 Unknown

Clarification:

Report this element for all cases where "Risk Factor #24 - Diabetes" is also reported, otherwise leave the field blank or enter 0.

If the patient has had a pancreatic transplant code "other" since the insulin from the new pancreas is not exogenous insulin.

Coding Note: *DM_TRT* definition is aligned with STS v2.9 data element 365.

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III. Pre-Op Surgical Risk Factors (continued)

25. Hepatic Failure

Variable Name: HEPATICF

The patient has cirrhosis or other liver disease and has a bilirubin > 2 mg/dL and a serum albumin < 3.5 g/dL.

27. Renal Failure, Dialysis

Variable Name: REN_DIAL

Indicate whether the patient is currently (prior to surgery) undergoing dialysis.

Interpretation: Includes any form of peritoneal or hemodialysis patient is receiving prior to surgery. 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

Coding Note: *REN_DIAL* definition is aligned with STS v2.9 data element 375 *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

69. Immediate Surgery after Catheter Based Procedure

Variable Name: IMMED_SURG

If the patient required immediate surgery after a catheter based procedure, select one response from the list below that best describes the procedure or reason for surgery.

- 1 Diagnostic Catheterization - Complication
- 2 Diagnostic Catheterization - Cath Findings
- 3 PCI Complication
- 4 EP Procedure Complication
- 5 Valve Procedure Complication
- 6 Left Atrial Appendage Occlusion Device Complication
- 7 Other Catheter-Based Procedure Complication.

Immediate surgery is defined as surgery as soon as the surgeon and/or operating room could accommodate the patient.

III. Pre-Op Surgical Risk Factors (continued)

32. Previous PCI, This Episode of Care

Variable Name: PCITHIS

Indicate whether there was a previous PCI 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.

Clarification:

This is reported only for PCI prior to the surgical procedure; therefore, do not report PCI in the same OR visit.

Coding Note:

PCITHIS should be reported (file upload value of 1) when STS v2.9 data element 780 POCPCIWhen = 1 or 2.

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33. PCI Before This Episode of Care

Variable Name: PCIBEFO

The patient has had a PCI before this episode of care.

38. Stent Thrombosis

Variable Name: THROMBOS

Formation of a blood clot/thrombus in the stented segment of an artery and/or adjacent area. This usually results in an acute occlusion, chest pain or development of an acute MI. Patient must be currently affected by stent thrombosis as evidenced by AMI, ACS, or clinical angina to code this risk factor.

Interpretation:

An occlusion alone, plaque build-up or in-stent restenosis does not constitute coding. There must be documentation noting thrombus. The thrombus needs to be in or around the area that was stented for the risk factor to be code

III. Pre-Op Surgical Risk Factors (continued)

39. Any Previous Organ Transplant

Variable Name: ORGAN

The patient has had any organ transplant prior to the current cardiac surgery. This includes, but is not limited to, heart, lung, kidney, and liver transplants. If a heart or lung transplant was performed during the operating room visit that generated this form, do not code this risk factor.

Interpretation:

Also code for bone marrow transplant. Do not code for corneal or skin transplant (grafting).

If the patient had a previous organ transplant and that organ was later removed, do not code this risk factor.

40. Heart Transplant Candidate

Variable Name: HT_TRANS

This risk factor should be coded when the patient is an approved heart transplant candidate before the start of the procedure.

Supporting documentation must be included in the patient's medical record showing that the patient was a transplant candidate prior to the start of the procedure. Acceptable documentation includes: notes that a pre-transplant evaluation was performed and patient was accepted, notes from the transplant coordinator that they have discussed this issue with the patient/family, or a note indicating the transplant patient's status based on UNOS urgency criteria.

During quarterly and annual data verification and validation efforts, supporting documentation for cases coded with this risk factor will be requested.

62. Active Endocarditis

Variable Name: ENDOCARD

Two or more positive blood cultures without other obvious source with demonstrated valvular vegetations or acute valvular dysfunction caused by infection.

Includes patients who are on antibiotics at the time of surgery.

Excludes patients who have completed antibiotic therapy and have no evidence of residual infection.

IV. Major Events Following Operation

Check to be sure that all of the listed major events occurred during or after the current cardiac surgery. Check at least one box in this section.

Please Note: Unless otherwise specified, a documented pre-operative condition that persists post-operatively with no increase in severity is not a major event. This is true even if the pre-operative condition is not part of this reporting system.

Unless otherwise specified, major events are only reported if they occur post-operatively, but before hospital discharge.

0. None

Variable Name: NOCOMPS

Check if none of the major events listed below occurred following the operation.

1. Stroke

Variable Name: STROKE

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 did not resolve within 24 hours.

Coding Note: *STROKE* definition is aligned with STS v2.9 data element 6810. Report "Yes" (value of 1) to *STROKE* when STS data element 6810 has a response of 3, 4, or 5.

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2. Q-Wave MI

Variable Name: POSTMI

New Q waves occurring within 48 hours after surgery.

IV. Major Events Following Operation (continued)

4. Deep Sternal Wound Infection

Variable Name: STERNINF

Indicate whether the patient had a deep sternal wound infection within 30 days of surgery (whether in the initial hospital stay or after discharge).

A deep incisional SSI must meet the following criteria:

Infection occurs within 30 days after the operative procedure

and involves deep soft tissues (e.g., fascial and muscle layers) of the incision

and patient has at least 1 of the following:

- a. Purulent drainage from the deep incision but not from the organ/space component of the surgical site
- b. A deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least 1 of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- c. An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. Diagnosis of a deep incisional SSI by a surgeon or attending physician.

5. Bleeding Requiring Reoperation

Variable Name: BLEDTREOP

If the patient was re-explored for mediastinal bleeding with or without tamponade either in the ICU, PACU or returned to the operating room, use the code below to indicate the time frame.

- 1 Acute (within 24 hours of the end of the case);
- 2 Late (more than 24 hours after the case ends).

Interpretation:

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. Tamponade is a situation which occurs when there is compression or restriction placed on the heart within the chest that creates hemodynamic instability or a hypoperfused state. Do not include medically (non-operatively) treated excessive post-operative bleeding/tamponade events. 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 bleeding with or without tamponade. Include only those interventions that pertain to the mediastinum or thoracic cavity.

Code exactly 24 hours as acute.

Coding Note: *BLEDTREOP* definition is aligned with STS v2.9 data element 6760 *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

IV. Major Events Following Operation (continued)

8. Sepsis

Variable Name: SEPSIS

Sepsis is defined as evidence of serious infection accompanied by a deleterious systemic response.

In the time period of the first 48 postoperative or postprocedural 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). A systemic inflammatory response syndrome (SIRS) is present when at least two of the following criteria are present: hypo- or hyperthermia (>38.5 or <36.0), tachycardia or bradycardia, tachypnea, leukocytosis or leukopenia, and thrombocytopenia.

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.

In the time period after the first 48 postoperative or postprocedural hours, sepsis may be diagnosed by the presence of a SIRS resulting from suspected or proven infection.

IV. Major Events Following Operation (continued)

9. G-I Event

Variable Name: GIBLEED

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;
- Prolonged ileus;
- Clostridium difficile

CLARIFICATION:

GI events may require medical management, observational management or surgical intervention to control. 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.

Example # 1: A patient has a placement of a Percutaneous Endoscopic Gastrostomy (PEG). Patients that receive PEG's are generally very sick patients that require long term nutritional support because of multiple postoperative complications and the inability to eat. If a PEG is placed in the stomach, it means that the stomach is working well enough to support the nutritional support that the PEG feedings are providing. Do not code a GI complication in this situation.

Example # 2: 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.

Example # 3: A patient has elevated liver enzymes postoperatively; a transient rise in the patient's liver enzymes does not represent a GI complication.

Coding Note: *GIBLEED* definition is aligned with STS v2.9 data element 6920. *Society of Thoracic Surgeons, Adult Cardiac Surgery Database, Version 2.9, used with permission.*

IV. Major Events Following Operation (continued)

10. Renal Failure

Variable Name: RENAL_FAI

Indicate whether the patient had a new requirement for dialysis postoperatively, which may include hemodialysis or peritoneal dialysis.

Interpretation:

May include either hemo or peritoneal dialysis. This includes a onetime 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) and Continuous Renal Replacement Therapy (CRRT) should be coded here as “Yes.”

Coding Note:

RENAL_FAI definition is aligned with STS v2.9 data element 6875.

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13. Prolonged Ventilator Dependence

Variable Name: RESP_FAI

Pulmonary insufficiency requiring intubation and ventilation for a period of 72 hours or more, at any time during the post-operative stay. For patients who are placed on and taken off ventilation several times, the total of these episodes should be 72 hours or more.

Interpretation:

If the patient is intubated for 72 or more hours after surgery this major event should be coded, even if the patient was intubated prior to the procedure.

The following scenario would be coded:

Patient was extubated 48 hours post-op. Patient was re-intubated sometime the next day. Patient was extubated 32 hours later.

It is not necessary to show that the prolonged ventilatory dependence was due to respiratory failure.

IV. Major Events Following Operation (continued)

14. Unplanned Cardiac Reoperation or Interventional Procedure

Variable Name: UNPLANREOP

Any unplanned cardiac reoperation or percutaneous coronary intervention that is required as a result of the current cardiac surgery. This would exclude a reoperation to control bleeding that is reported under Major Event #5.

Interpretation:

This major event should be reported for any cardiac surgery, not just those reportable in CSRS. Procedures should be directly related to the heart. Examples of reportable surgeries include but are not limited to: CABG, cardiac massage, or cardiac explorations. Some examples of the procedures not reportable are: pacemaker insertion, pericardiocentesis, and pleurocentesis.

If the chest is left open after surgery with a return to the operating room to close, this would not be considered an unplanned cardiac reoperation. If clots need to be removed from an open chest this would not be considered an unplanned cardiac reoperation.

The procedure does not have to be performed in the operating room or cath lab.

V. Discharge Information

Discharge Status

Variable Name: STATUS, DISWHERE

Check the appropriate code.

Discharged Alive:

11- Home

12- Hospice

13- Acute Care Facility

14- Skilled Nursing Facility

15- Inpatient Physical Medicine and Rehab

19- Other(specify)

Died In:

2- Operating Room

3- Recovery Room

4- Critical Care Unit

5- Medical/Surgical Floor

6- In-transit to Other Facility

8- Elsewhere in Hospital (specify)

If a patient is discharged to hospice (including home with hospice), the discharge status should be reported with code 12. Note that for purposes of analysis a hospice discharge (code 12) is considered an in-hospital mortality unless the hospital can provide documentation that 30 days after discharge the patient was still alive (even if still in hospice). Please see the full hospice policy and reporting requirements in “CSRS Data Reporting Policies.”

If the patient came from a prison or correctional facility and is being discharged back to the same setting then “11 – Home” would be coded.

If the patient is discharged to sub-acute rehab that is in a skilled nursing facility then the discharge status would be code 14. If it is unknown where the sub-acute rehab facility is located, then the discharge status would be code 19.

If the patient is discharged to an inpatient physical medicine and rehabilitation unit, the discharge status should be code 15.

“19 – Other (specify)” should only be checked for a live discharge status not otherwise specified in this section (e.g. AMA).

If “8 – Elsewhere in Hospital (specify)” is checked, specify where the patient died.

Any status code 8 or 19 that is reported without an indication of where the patient expired will be reviewed during data validation.

Hospital Discharge Date

Variable Name: DISDATE

Enter the date the patient was discharged from the hospital.

If the patient died in the hospital, the hospital discharge date is the date of death.

V. Discharge Information (continued)

30 Day Status

Variable Name: THIRTYDAY

Report the patient's status at 30 days post-procedure using the appropriate code.

VI. Person Completing Report

Name

This space is provided as an aid to the hospital. Enter the name and telephone number of the person completing the report, and the date the report was completed. This field is not required and is not used by the Department of Health. It is provided solely for the use of the individual hospitals.

This field appears only on the hard copy form, it is not part of data entry or file specification for transmission to cardiac services program.

Referring Physician

Variable Name: REF_PHYS

This space is provided as an aid to the hospital. It is intended to allow the name of the referring cardiologist or primary care physician to be entered. For many hospitals, this is useful for tracking 30-day status. By entering the name of the referring physician case lists can be generated and sent to the referring physician for follow-up. This field is not required and is not used by the Department of Health. It is provided solely for the use of the individual hospitals.

Attachment A

PFI Numbers for Cardiac Diagnostic and Surgical Centers

PFI Facility

ALBANY AREA

0001 Albany Medical Center Hospital
0746 Bassett Medical Center
0829 Ellis Hospital
1005 Glens Falls Hospital
0756 Samaritan Hospital
0818 Saratoga Hospital
0005 St. Peter's Hospital
0135 University of Vermont Health Network Champlain Valley Physicians Hospital

BUFFALO AREA

0207 Buffalo General Medical Center
0210 Erie County Medical Center
0213 Mercy Hospital of Buffalo
0574 Niagara Falls Memorial Medical Center
0066 Olean General Hospital
0103 Women's Christian Association Hospital

ROCHESTER AREA

0116 Arnot Ogden Medical Center
0411 Rochester General Hospital
0413 Strong Memorial Hospital
0471 Unity Hospital of Rochester

SYRACUSE AREA

0977 Cayuga Medical Center
0636 Crouse Hospital
0598 St. Elizabeth Medical Center
0630 St. Joseph's Hospital Health Center
0058 United Health Services Hospital, Inc.-Wilson Medical Center
0635 University Hospital SUNY Health Science Center (Upstate)

PFI Facility

NEW ROCHELLE AREA

0885 Long Island Community Hospital
0779 Good Samaritan Hospital of Suffern
0925 Good Samaritan Hospital Medical Center-West Islip
0913 Huntington Hospital
0990 HealthAlliance Hospital – Broadway Campus
0989 HealthAlliance Hospital – Mary’s Avenue Campus
0513 Mercy Medical Center
0180 MidHudson Regional Hospital of Westchester Medical Center
1072 Montefiore New Rochelle Hospital
0528 Nassau University Medical Center
0541 North Shore University Hospital
1122 NYP Lawrence Hospital
0511 NYU-Winthrop University Hospital
0699 Orange Regional Medical Center
0938 Peconic Bay Medical Center
0527 South Nassau Communities Hospital
0889 Southampton Hospital
0924 Southside Hospital
0943 St. Catherine of Siena Medical Center
0563 St. Francis Hospital (aka St. Francis Hospital The Heart Center, Roslyn)
0694 St. Luke’s Cornwall Hospital-Newburgh
0245 University Hospital - Stony Brook
0181 Vassar Brothers Medical Center
1139 Westchester Medical Center
1045 White Plains Hospital

NY CITY AREA

1438 Bellevue Hospital Center
1178 BronxCare Health System-Concourse
1286 Brookdale Hospital Medical Center
1288 Brooklyn Hospital Center-Downtown
1294 Coney Island Hospital
1626 Elmhurst Hospital Center
1445 Harlem Hospital Center
1309 Interfaith Medical Center (Brooklyn)
1165 Jacobi Medical Center
1629 Jamaica Hospital Medical Center
1301 King’s County Hospital Center
1450 Lenox Hill Hospital
1630 Long Island Jewish Medical Center
1305 Maimonides Medical Center
1169 Montefiore Medical Center-Henry and Lucy Moses Division
1304 NYU Langone Hospital-Brooklyn

PFI Facility

NY CITY AREA (CONT.)

- 3058 Montefiore Medical Center-Jack D. Weiler Hospital of
A. Einstein College Division
- 1439 Mount Sinai Beth Israel
- 1456 Mount Sinai Hospital
- 1469 Mount Sinai St. Luke's
- 1306 NYP Hospital - Brooklyn Methodist Hospital
- 1464 NY Presbyterian-Columbia Presbyterian Center
- 1458 NY Presbyterian-NY Weill Cornell Center
- 1637 NY Presbyterian-Queens
- 1463 NYU Hospitals Center Center
- 1176 St. Barnabas Hospital
- 1740 Staten Island University Hospital-North
- 1738 Richmond University Medical Center
- 1320 University Hospital of Brooklyn
- 1318 Wyckoff Heights Medical Center

8888 Catheterization Laboratory at a Veterans Administration Hospital in New York. (for use in this reporting system; not an official Permanent Facility Identifier)

9999 Catheterization Laboratory Outside New York State (for use in this reporting system; not an official Permanent Facility Identifier)

A complete listing of NYS hospitals, including their PFI can be found at: http://www.health.ny.gov/statistics/sparcs/reports/compliance/alpha_facilities.htm
Use the last four digits of the number listed to the right of the name for the PFI.

Attachment B

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Attachment C Payer Codes

- 01 Medicare—Fee For Service
- 02 Medicare—Managed Care
- 03 Medicaid—Fee For Service
- 04 Medicaid—Managed Care
- 05 Blue Cross
- 06 HMO/Managed Care
- 07 Other Private Insurance Company
- 11 Self Pay
- 19 Other

Attachment D

Congenital and Acquired Cardiac Procedure Codes NYSDOH CARDIAC ADVISORY COMMITTEE

100-398 Congenital Heart Disease - Operations With or Without Extracorporeal Circulation

Note: Extracorporeal circulation will be determined from the data element Entire Procedure Off Pump reported under Section II. Procedural Information on the front of the form. Please accurately complete this item for all appropriate cases.

Anomalies of Pulmonary Veins

- 100 Repair of Anomalous Pulmonary Venous Return
- 101 Repair of Pulmonary Vein Stenosis
- 103 Repair of Partial Anomalous Pulmonary Venous Return

Anomalies of Atrial Septum

- 120 ASD Closure
- 121 Creation of ASD
- 122 Repair of Cor Triatriatum
- 123 PFO Closure

Atrioventricular Septal Defect (AVSD)

- 130 Repair of Complete AV Canal
- 131 Repair of Partial AV Canal

Anomalies of Ventricular Septum

- 140 Repair of VSD
- 141 Creation/Enlargement of VSD
- 142 Fenestration of VSD Patch

Anomalies of Atrioventricular Valves

Tricuspid Valve

- 150 Repair (Non-Ebstein's Valve)
Replacement
- 151 Homograft
- 152 Prosthetic
- 153 Tricuspid Valve Closure
- 154 Repair Ebstein's Anomaly

Anomalies of Atrioventricular Valves (continued)

Mitral Valve

- 160 Resect supramitral ring
- 161 Repair (including annuloplasty)
Replacement
- 162 Homograft
- 163 Prosthetic
- 170 Common AV Valve Repair

Anomalies of Ventricular Outflow Tract(s)

Pulmonary Ventricular Outflow Tract

- 180 Pulmonary Valvotomy/Valvectomy
- 181 Resection of subvalvular PS
- 182 Repair of supra-ventricular PS
Pulmonary Valve Replacement
- 190 Homograft
- 191 Prosthetic
- 192 Xenograft

Pulmonary Outflow Conduit

- Valved
- 200 Homograft
- 201 Prosthetic
- 202 Non-Valved
 - Transannular Patch
 - 210 With Monocusp Valve
 - 211 Without Monocusp Valve
 - 212 Repair Branch PS

Aortic Ventricular Outflow Tract

- 220 Aortic Valvuloplasty
- 221 Aortic Valvotomy
- 230 Repair Supra-ventricular AS
- 231 Resection of Discrete Subvalvular AS
- 235 Aortoventriculoplasty (Konno Procedure)
Aortic Valve Replacement
- 240 Autograft (Ross Procedure)
- 241 Homograft
- 242 Prosthetic
- 243 Heterograft
- Aortic Root Replacement
- 250 Autograft (Ross Procedure)
- 251 Homograft
- 252 Prosthetic
- 255 LV Apex to Aorta Conduit

Tetralogy of Fallot

- 260 Repair with Pulmonary Valvotomy
- 261 Repair with Transannular Patch
- 262 Repair with Non-valved Conduit
Repair with Valved Conduit
- 263 Homograft
- 264 Prosthetic
- 265 Repair with reduction/plasty of PAs
Repair with pulmonary valve replacement
- 266 Homograft
- 267 Prosthetic

Truncus Arteriosus

- 262 Repair with Non-Valved Conduit
Repair with Valved Conduit
- 263 Homograft
- 264 Prosthetic

Univentricular Heart (Single Ventricle)

- Fontan Operations
- 270 Direct RV-PA Connection
Total Cavopulmonary Connection
- 271 Lateral tunnel – nonfenestrated
- 272 Lateral tunnel – fenestrated
- 273 Extracardiac – nonfenestrated
- 274 Extracardiac – fenestrated
- 275 Septation of Single Ventricle
Hypoplastic Right Ventricle
Valved
- 200 Homograft
- 201 Prosthetic
- 202 Non-Valved
Transannular Patch
- 210 With Monocusp Valve
- 211 Without Monocusp Valve
- Hypoplastic Left Ventricle
- 280 Norwood
- 290 Damus Kaye Stansel (DSK)

Transposition of Great Arteries or Double Outlet RV

- 310 Arterial Switch
- 311 Senning Procedure
- 312 Mustard Procedure
- 313 Intraventricular Repair of DORV

Transposition of Great Arteries or Double Outlet RV (continued)

	Rastelli Procedure
	RV-PA Conduit
	Valved
320	Homograft
321	Prosthetic
322	Non-Valved
325	REV operation (Modified Rastelli)
	LV-PA Conduit
	Valved
326	Homograft
327	Prosthetic
328	Non-Valved

Great Vessel Anomalies

330	PDA Ligation
331	Repair Aortopulmonary Window
332	Reimplantation of left or right pulmonary artery
333	Repair Sinus of Valsalva Aneurysm
	Aortic Repair (Coarctation or Interruption)
340	End to end anastomosis
348	End to side anastomosis
341	Subclavian flap angioplasty
342	Onlay Patch
343	Interposition graft
344	Vascular Ring Division
345	Repair of PA Sling
346	Reimplantation of Innominate Artery
347	Aortoplexy

Coronary Artery Anomalies

	Translocation of LCA to Aorta
350	Direct
351	Transpulmonary Tunnel (Takeuchi)
352	Coronary Artery Ligation
353	Coronary Fistula Ligation

Cardiomyopathies

360	Left Ventricular Reconstruction (Batiste Procedure, Surgical Ventricular Restoration)
361	Radical Myomectomy

Interval Procedures

- 370 Pulmonary Artery Band
- 375 Unifocalization of Pulmonary Vessels
Shunts
- 381 Central Aortopulmonary Shunt
Blalock Taussig Shunts
- 382 Classical
- 383 Modified
Glenn Shunts
- 384 Unidirectional (Classical)
- 385 Bidirectional
- 386 Bilateral Bidirectional
- 390 Cardiac Arrhythmia Surgery
- 398 Other Operations for Congenital Heart Disease

400-998 Acquired Heart Disease – Operations Performed With or Without Extracorporeal Circulation

- 401 Mitral Valvotomy
- 402 Pericardiectomy
- 403 Stab Wound of Heart or Great Vessel Repair (without extracorporeal
circulation)

Other

- 498 Other Operation for Acquired Heart Disease (without extracorporeal
circulation)

Valve Repair

- 500 Aortic
- 501 Mitral
- 502 Tricuspid
- 503 Pulmonary

Valve Replacement

- 510-518* Ross Procedure
- 520-528* Aortic Mechanical
- 530-538* Aortic Heterograft
- 540-548* Aortic Homograft

Valve Replacement (continued)

550-558*	Mitral Mechanical
560-568*	Mitral Heterograft
600-608*	Mitral Homograft
570-578*	Tricuspid Mechanical
580-588*	Tricuspid Heterograft
590-598*	Pulmonary

*REOPERATIONS: For Valve Replacement (510-608), use third digit to indicate reason for reoperation, as below. Note, the information below is specific to the valve reported. For example, a patient with previous aortic valve replacement who is now having mitral valve replacement (mechanical) would be reported using code 550 because this is not a re-operation on the mitral valve. In the event of multiple valve surgery, the third digit may be different for each valve code reported, i.e. one valve may be a re-op and the other(s) may not.

Use code 7 – Complication of Transcatheter Valve Replacement in the event of an unsuccessful Transcatheter Valve Replacement which requires surgical valve replacement.

0 Not a Reoperation	5 Disease of Another Valve
1 Periprosthetic Leak	6 Failed Catheter-based Valve Repair
2 Prosthetic Endocarditis	7 Complication of Transcatheter Valve Replacement
3 Prosthetic Malfunction	
4 Failed Surgical Valve Repair	8 Other Reason

Adjunct Valve Information

Transcatheter Valve Replacement

640	Transfemoral Approach
641	Transapical Approach
642	Arch Branches
643	Ascending Aorta
644	Venous
645	Venous Crossover

Note: Use these codes in conjunction with the valve replacement codes above to indicate if the valve replacement was performed using a transcatheter (transcutaneous) approach. You must also report the appropriate code for valve replacement. Report these procedures no matter where in the hospital they are performed.

Valve Conduits

660	Apical Aortic Conduit
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Note: Record aortic valve and ascending aorta replacement under aneurysms.

Coronary Artery Bypass Grafts

670 Coronary Artery Bypass Graft

Other Revascularization

710 Transmyocardial Revascularization

711 Percutaneous Coronary Intervention in the same setting as CABG or Valve surgery

715 Growth Factor Installation

Additional Procedures with or without CABG

760 Acquired Ventricular Septal Defect

761 Resection or Plication of LV Aneurysm

762 Ventricular Reconstruction (Batiste Procedure, Surgical Ventricular Restoration)

763 Carotid Endarterectomy (report only if done with another reportable cardiac surgical procedure)

764 Implantation of AICD (report only if done with another reportable cardiac surgical procedure)

Radiofrequency or Operative Ablation

770 Atrial

771 Ventricular

772 Maze Procedure

Surgery on the Aorta

786 Major Surgery for Pre-existing Aortic Disease

804 Major Surgery for Pre-existing Aortic Dissection

805 Surgery for Repair of Aortic Deceleration Injury

Transplant Procedures

820 Heart Transplant

821 Heart and Lung Transplant

822 Lung Transplant

830 Left Ventricular Assist Device (LVAD) – Extracorporeal

831 Left Ventricular Assist Device (LVAD) – Implantable

832 Right Ventricular Assist Device (RVAD)

833 Bi-Ventricular Assist Device (BIVAD)

834 Extracorporeal Membrane Oxygenation (ECMO)

835 VAD Removal

840 Ventricular Assist Device as a Destination Therapy (must also code either 830 or 831)

901 Artificial Heart

Other

- 902 Pulmonary Embolectomy
- 903 Stab Wound of Heart or Great Vessel Repair (with extracorporeal circulation)
- 904 Removal of Intracardiac Neoplasm
- 905 Removal of Intracardiac Catheter (surgical)
- 907 Repair of a Cardiac Laceration due to Trauma
- 908 Removal of Pacemaker or AICD and/or leads or wires
- 915 Septal Myomectomy
- 916 Ventricular Myomectomy
- 920 Ventricular Free Wall Rupture
- 930 Attempted Transcatheter Valve Replacement
- 931 Aborted Transcatheter Valve Replacement
- 932 Attempted Surgical Procedure
- 933 Aborted Surgical Procedure
- 998 Other Operation for Acquired Heart Disease (with extracorporeal circulation)

Attachment E

Congenital Cardiac Diagnosis Codes¹

SEPTAL DEFECTS

ASD

- 10 PFO
- 20 ASD, Secundum
- 30 ASD, Sinus venosus
- 40 ASD, Coronary sinus
- 50 ASD, Common atrium (single atrium)
- 2150 ASD, Postoperative interatrial communication

VSD

- 71 VSD, Type 1 (Subarterial) (Supracristal) (Conal septal defect) (Infundibular)
- 73 VSD, Type 2 (Perimembranous) (Paramembranous) (Conoventricular)
- 75 VSD, Type 3 (Inlet) (AV canal type)
- 77 VSD, Type 4 (Muscular)
- 79 VSD, Type: Gerbode type (LV-RA communication)
- 80 VSD, Multiple

AV Canal

- 100 AVC (AVSD), Complete (CAVSD)
- 110 AVC (AVSD), Intermediate (transitional)
- 120 AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum)

AV Window

- 140 AP window (aortopulmonary window)
- 150 Pulmonary artery origin from ascending aorta (hemitruncus)

Truncus Arteriosus

- 160 Truncus arteriosus
- 170 Truncal valve insufficiency
- 2470 Truncal valve stenosis
- 2010 Truncus arteriosus + Interrupted aortic arch

PULMONARY VENOUS ANOMALIES

Partial Anomalous Pulmonary Venous Connection

- 180 Partial anomalous pulmonary venous connection (PAPVC)
- 190 Partial anomalous pulmonary venous connection (PAPVC), scimitar

Total Anomalous Pulmonary Venous Connection

- 200 Total anomalous pulmonary venous connection (TAPVC), Type 1 (supracardiac)
- 210 Total anomalous pulmonary venous connection (TAPVC), Type 2 (cardiac)
- 220 Total anomalous pulmonary venous connection (TAPVC), Type 3 (infracardiac)
- 230 Total anomalous pulmonary venous connection (TAPVC), Type 4 (mixed)

COR TRIARIATUM

- 250 Cor triatriatum

PULMONARY VENOUS STENOSIS

- 260 Pulmonary venous stenosis

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

SYSTEMIC VENOUS ANOMALIES

Anomalous Systemic Venous Connection

270 Systemic venous anomaly

Systemic Venous Obstruction

280 Systemic venous obstruction

RIGHT HEART LESIONS

Tetralogy of Fallot

290 TOF
2140 TOF, Pulmonary stenosis
300 TOF, AVC (AVSD)
310 TOF, Absent pulmonary valve

Pulmonary Atresia

320 Pulmonary atresia
330 Pulmonary atresia, IVS
340 Pulmonary atresia, VSD (Including TOF, PA)
350 Pulmonary atresia, VSD-MAPCA
360 MAPCA(s) (major aortopulmonary collateral[s]) (without PA-VSD)

Tricuspid Valve Disease and Ebstein's Anomaly

370 Ebstein's anomaly
380 Tricuspid regurgitation, non-Ebstein's related
390 Tricuspid stenosis
400 Tricuspid regurgitation and tricuspid stenosis
410 Tricuspid valve, Other

RVOT Obstruction and/or Pulmonary Stenosis

420 Pulmonary stenosis, Valvar
430 Pulmonary artery stenosis (hypoplasia), Main (trunk)
440 Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)
450 Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)
470 Pulmonary artery, Discontinuous
490 Pulmonary stenosis, Subvalvar
500 DCRV

Pulmonary Valve Disease

510 Pulmonary valve, Other
530 Pulmonary insufficiency
540 Pulmonary insufficiency and pulmonary stenosis

SHUNT FAILURE

Shunt Failure

2130 Shunt failure

CONDUIT FAILURE

Conduit Failure

520 Conduit failure

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

LEFT HEART LESIONS

Aortic Valve Disease

- 550 Aortic stenosis, Subvalvar
- 560 Aortic stenosis, Valvar
- 570 Aortic stenosis, Supravalvar
- 590 Aortic valve atresia
- 600 Aortic insufficiency
- 610 Aortic insufficiency and aortic stenosis
- 620 Aortic valve, Other

Sinus of Valsalva Fistula/Aneurysm

- 630 Sinus of Valsalva aneurysm

LV to Aorta Tunnel

- 640 LV to aorta tunnel

Mitral Valve Disease

- 650 Mitral stenosis, Supravalvar mitral ring
- 660 Mitral stenosis, Valvar
- 670 Mitral stenosis, Subvalvar
- 680 Mitral stenosis, Subvalvar, Parachute
- 695 Mitral stenosis
- 700 Mitral regurgitation and mitral stenosis
- 710 Mitral regurgitation
- 720 Mitral valve, Other

Hypoplastic Left Heart Syndrome

- 730 Hypoplastic left heart syndrome (HLHS)

Shone's Syndrome

- 2080 Shone's syndrome

CARDIOMYOPATHY

- 740 Cardiomyopathy (including dilated, restrictive, and hypertrophic)
- 750 Cardiomyopathy, End-stage congenital heart disease

PERICARDIAL DISEASE

- 760 Pericardial effusion
- 770 Pericarditis
- 780 Pericardial disease, Other

SINGLE VENTRICLE

- 790 Single ventricle, DILV
- 800 Single ventricle, DIRV
- 810 Single ventricle, Mitral atresia
- 820 Single ventricle, Tricuspid atresia
- 830 Single ventricle, Unbalanced AV canal
- 840 Single ventricle, Heterotaxia syndrome
- 850 Single ventricle, Other
- 851 Single Ventricle + Total anomalous pulmonary venous connection (TAPVC)

TRANSPOSITION OF THE GREAT ARTERIES

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

Congenitally Corrected TGA

870	Congenitally corrected TGA
872	Congenitally corrected TGA, IVS
874	Congenitally corrected TGA, IVS-LVOTO
876	Congenitally corrected TGA, VSD
878	Congenitally corrected TGA, VSD-LVOTO

Transposition of the Great Arteries

880	TGA, IVS
890	TGA, IVS-LVOTO
900	TGA, VSD
910	TGA, VSD-LVOTO

DORV

930	DORV, VSD type
940	DORV, TOF type
950	DORV, TGA type
960	DORV, Remote VSD (uncommitted VSD)
2030	DORV + AVSD (AV Canal)
975	DORV, IVS

DOLV

980	DOLV
-----	------

THORACIC ARTERIES AND VEINS

Coarctation of Aorta and Aortic Arch Hypoplasia

990	Coarctation of aorta
1000	Aortic arch hypoplasia
92	VSD + Aortic arch hypoplasia
94	VSD + Coarctation of aorta

Coronary Artery Anomalies

1010	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA)
1020	Coronary artery anomaly, Anomalous pulmonary origin (includes ALCAPA)
1030	Coronary artery anomaly, Fistula
1040	Coronary artery anomaly, Aneurysm
2420	Coronary artery anomaly, Ostial atresia
1050	Coronary artery anomaly, Other

Interrupted Arch

1070	Interrupted aortic arch
2020	Interrupted aortic arch + VSD
2000	Interrupted aortic arch + AP window (aortopulmonary window)

Patent Ductus Arteriosus

1080	Patent ductus arteriosus
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Vascular Rings and Slings

1090	Vascular ring
1100	Pulmonary artery sling

THORACIC ARTERIES AND VEINS (CONTINUED)

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

Aortic Aneurysm

1110 Aortic aneurysm (including pseudoaneurysm)

Aortic Dissection

1120 Aortic dissection

THORACIC AND MEDIASTINAL DISEASE

Lung Disease

1130 Lung disease, Benign

1140 Lung disease, Malignant

Tracheal Stenosis

1160 Tracheal stenosis

2430 Tracheomalacia

1170 Airway disease

Pleural Disease

1430 Pleural disease, Benign

1440 Pleural disease, Malignant

1450 Pneumothorax

1460 Pleural effusion

1470 Chylothorax

1480 Empyema

Esophageal Disease

1490 Esophageal disease, Benign

1500 Esophageal disease, Malignant

Mediastinal Disease

1505 Mediastinal disease

1510 Mediastinal disease, Benign

1520 Mediastinal disease, Malignant

Diaphragmatic Disease

1540 Diaphragm paralysis

1550 Diaphragm disease, Other

Chest Wall

2160 Rib tumor, Benign

2170 Rib tumor, Malignant

2180 Rib tumor, Metastatic

2190 Sternal tumor, Benign

2200 Sternal tumor, Malignant

2210 Sternal tumor, Metastatic

Pectus Excavatum, Carinatum

2220 Pectus carinatum

2230 Pectus excavatum

Thoracic Outlet

2240 Thoracic outlet syndrome

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

ELECTROPHYSIOLOGICAL

1180	Arrhythmia
2440	Arrhythmia, Atrial, Atrial fibrillation
2450	Arrhythmia, Atrial, Atrial flutter
2460	Arrhythmia, Atrial, Other
2050	Arrhythmia, Junctional
2060	Arrhythmia, Ventricular
1185	Arrhythmia, Heart block
1190	Arrhythmia, Heart block, Acquired
1200	Arrhythmia, Heart block, Congenital
1220	Arrhythmia, Pacemaker, Indication for replacement

MISCELLANEOUS, OTHER

1230	Atrial Isomerism, Left
1240	Atrial Isomerism, Right
2090	Dextrocardia
2100	Levocardia
2110	Mesocardia
2120	Situs inversus
1250	Aneurysm, Ventricular, Right (including pseudoaneurysm)
1260	Aneurysm, Ventricular, Left (including pseudoaneurysm)
1270	Aneurysm, Pulmonary artery
1280	Aneurysm, Other
1290	Hypoplastic RV
1300	Hypoplastic LV
2070	Postoperative bleeding
1310	Mediastinitis
1320	Endocarditis
1325	Rheumatic heart disease
1330	Prosthetic valve failure
1340	Myocardial infarction
1350	Cardiac tumor
1360	Pulmonary AV fistula
1370	Pulmonary embolism
1385	Pulmonary vascular obstructive disease
1390	Pulmonary vascular obstructive disease (Eisenmenger's)
1400	Primary pulmonary hypertension
1410	Persistent fetal circulation
1420	Meconium aspiration
2250	Kawasaki disease
1560	Cardiac, Other
1570	Thoracic and/or mediastinal, Other
1580	Peripheral vascular, Other
2260	Complication of cardiovascular catheterization procedure
2270	Complication of cardiovascular catheterization procedure, Device embolization
2280	Complication of cardiovascular catheterization procedure, Device malfunction
2290	Complication of cardiovascular catheterization procedure, Perforation
2300	Complication of interventional radiology procedure
2310	Complication of interventional radiology procedure, Device embolization
2320	Complication of interventional radiology procedure, Device malfunction
2330	Complication of interventional radiology procedure, Perforation
2340	Foreign body, Intracardiac foreign body
2350	Foreign body, Intravascular foreign body
2360	Open sternum with closed skin
2370	Open sternum with open skin (includes membrane placed to close skin)

¹Society of Thoracic Surgeons, Adult Cardiac Surgery Database, used with permission.

Attachment E

Congenital Cardiac Diagnosis Codes¹

MISCELLANEOUS, OTHER

2380	Retained sternal wire causing irritation
2390	Syncope
2400	Trauma, Blunt
2410	Trauma, Penetrating
7000	Normal heart
7777	Miscellaneous, Other

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