Digital Imaging and Communications in Medicine (DICOM)

Supplement 241: Structural Heart Procedural SR Template

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Status: Public Comment

Developed pursuant to DICOM Work Item 2022-04-C

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# Open Issues

|  |  |
| --- | --- |
| 1. | Should a qualitative findings template be added?  Registry data elements include qualitative findings (e.g., mild, moderate, or severe stenosis).  Including these elements in the DICOM SR template could add value depending on typical workflow practices, such as when a cardiologist performs Transesophageal Echocardiography. It is currently assumed that these elements are added by the cardiologist in a downstream IT reporting system and captured in another format, such as CDA within the IHE CPN profile.  This should be confirmed with organizations such as:   * Society for Cardiovascular Angiography and Interventions (SCAI) * American College of Cardiology (ACC) * European Association of Percutaneous Cardiovascular Interventions (EAPCI) * Heart Valve Society (HVS) * The American Association for Thoracic Surgery (AATS) * Transcatheter Cardiovascular Therapeutics (TCT) * American Heart Association (AHA) * American Society of Echocardiography (ASE) |
| 2. | Should Heart Rate be encoded separately, or within TID 3602?  newTID1 includes a row for “Heart Rate” to encode the heart rate at time of image acquisition, TID 3602 also includes “Heart Rate” (Row 11) “for use when the SR SOP Instance does not record vital signs at multiple procedure phases or stages”. |
| 3. | Should the related Structural Heart Procedure be encoded in a separate "Indications for Procedure" container or within "Current Procedure Descriptions"? |
| 4. | Is the term (1231449003, SCT, Transcatheter repair of tricuspid valve leaflet) in newCID1 sufficient to describe mitral or aortic valve procedures (e.g., clip, annuloplasty or replacement)? |
| 5. | Is there a clinical guideline defining the boundary of the valvular “annulus” (e.g., as in newCODE7)?  Should we specify inner surface of annulus, or is the ambiguity within the current definition acceptable? Such measurements are influenced by the image resolution which influences their repeatability. |
| 6. | Is “coaptation length” or “coaptation height” preferred?  This supplement uses length to describe the extent of leaflet contact (see newCODE24, newCODE59, and newCODE95). Coaptation height appears to be more applicable as an alternative to tenting height, rather than describing leaflet contact. |
| 7. | Is the inclusion of the “Tricuspid valve sphericity index” necessary, or is it already represented by another terms?  Public comment is sought on potential term inconsistencies.  “Mitral annulus diameter ratio” (newCODE60) is similar in definition to the “Tricuspid valve sphericity index” (newCODE99). Additionally, “Mitral valve sphericity index” (newCODE81) bears resemblance to the existing LOINC term “Left ventricular sphericity index end diastole” (20324-0). |
| 8. | Should separate codes be established to clearly differentiate measurements obtained from 3D views versus 2D views, or are the current definitions sufficient?  For example, Mitral Valve Coaptation Length (newCODE59) could be measured in either 2D or 3D. MPR (Multi-Planar Reformation) image quality may not be as high as 2D, but it allows for more accurate positioning. Should this variability in image quality and positioning be reflected in the coding? |
| 9. | Are there distance or length measurements that need to include max, average, minimum or median methods?  For example, Mitral valve tenting height (newCODE82) is defined as “The perpendicular distance...” Should this be further specified as the max, average, minimum or median distance? |
| 10. | Are the provided measurements sufficient for evaluating peri-device leaks, or are there additional measurements that should be included? |
| 11. | How should the diagrams currently proposed in D. DICOM Controlled Terminology Definitions (Normative) be presented?  After Public Comment, measurements will be proposed as LOINC codes. The ones that are not accepted will remain as DCM codes. Should the diagrams stay in-line, or should there be separate PS3.17 content? |

# Closed Issues

|  |  |
| --- | --- |
| 1. | Should this use pre-coordinated or post-coordinated terms?  **Response**: Pre-coordinated for consistency and reduced ambiguity. |
| 2. | Should Angiographic templates be added?  **Response**: No  This supplement does not introduce structural heart cath. measurements, as TID 3500 (Hemodynamics Report) includes the necessary measurements.  In the future, there may be interest in incorporating templates for XA/Echo/CT fusion |
| 3. | Should TID 3802 (Cardiovascular Patient History) be added to capture patient history?  Registry data elements include patient history (see references).  **Response**: No  These are typically added by the cardiologist in a downstream IT reporting system, and captured in CDA (as in IHE CPN). |
| 4. | Should acronyms be added to newCID1 Structural Heart Procedures?  **Response**: No  Acronyms vary by locale. SNOMED avoids the incorporation of acronyms. |
| 5. | Should new terms be proposed to LOINC, or should DCM terms be created?  **Response**: LOINC, after Public Comment. |
| 7. | Should a separate template be created, or is incorporation into TID 5300 acceptable?  **Response**: A separate template modeled after 5300 will be created, and 5300 sub-templates will be renamed, so they can be reused.  WG-01/12 considered 4 approaches:  1. Add new rows referencing pre-coordinated measurements  2. Add a single row that references the 2 new CIDs  3. Add a single row referencing a composite CID  4. Don't modify TID 5300 and create a new template  A single template for CT, Echo (and possibly MR), provides consistency for report consumers |
| 8. | Is a dedicated SOP class needed, or is using Comprehensive SR sufficient?  **Response**: Comprehensive SR is sufficient. |
| 9. | Should TEE scan plane be pre-coordinated or post-coordinated?  **Response**: Post-coordinated, since only one left atrial appendage closure device manufacturer requires them. |

# Scope and Field of Application

This supplement introduces SR templates for Structural Heart Procedures. These procedures involve interventions aimed at addressing various conditions or abnormalities affecting the structures of the heart, excluding the coronary arteries. Unlike open-heart surgery, these interventions are characterized by their minimally invasive nature or catheter-based approach.

Periprocedural imaging follows a consistent pattern of three phases: pre-operative assessment, intraprocedural assessment, and follow-up. Throughout all three phases, echocardiography emerges as the primary imaging modality. X-ray angiography is predominantly utilized for intraprocedural guidance. CT may also find application in the pre-operative assessment and follow-up. The templates proposed in the supplement are based the Simplified Adult Echocardiography Templates (root TID 5300), modified to support multimodality image acquisition.

Structural Heart Procedures include:

* **TAVI:** Transcatheter Aortic Valve implantation
* **TAVR:** Transcatheter Aortic Valve Replacement
* **TTVr:** Transcatheter Tricuspid Valve Replacement
* **TTVR:** Transcatheter Tricuspid Valve Repair
* **TEER:** Transcatheter Edge-to-Edge Repair
* **TMVr**: Transcatheter Mitral Leaflet Clip Replacement
* **TMVR:** Transcatheter Mitral Valve Replacement
* **LAAO:** Left Atrial Appendage Occlusion

*References:*

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[*https://www.accessdata.fda.gov/cdrh\_docs/pdf20/P200049C.pdf*](https://www.accessdata.fda.gov/cdrh_docs/pdf20/P200049C.pdf) *Amplatzer™ Amulet™ Left Atrial Appendage Occluder Instructions for Use*

[*https://www.bostonscientific.com/content/dam/elabeling/ic/watchman-flx/51065198-01A\_WATCHMAN%20FLX\_IFU\_ML\_s.pdf*](https://www.bostonscientific.com/content/dam/elabeling/ic/watchman-flx/51065198-01A_WATCHMAN%20FLX_IFU_ML_s.pdf) *WATCHMAN FLX Instructions for Use*

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[*https://www.ncdr.com/WebNCDR/docs/default-source/tvt-public-page-documents/tvt\_v3\_ttvp\_dcf\_1\_26\_2021-(1).pdf*](https://www.ncdr.com/WebNCDR/docs/default-source/tvt-public-page-documents/tvt_v3_ttvp_dcf_1_26_2021-(1).pdf) *STS/ACC TVT Registry v3 Data Collection Form*

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*Guidelines for Performing a Comprehensive Transthoracic Echocardiographic Examination in Adults: Recommendations from the American Society of Echocardiography*

# Changes to NEMA Standards Publication PS3.16

**Digital Imaging and Communications in Medicine (DICOM)**

Part 16: Content Mapping Resource

Modify Table TID 5240. Myocardial Strain Analysis as follows

**Table TID 5240. Myocardial Strain Analysis**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| 1 |  |  | CONTAINER | DT (59776-5, LN, "Findings") | 1 | M |  |  |
| 2 | > | CONTAINS | CONTAINER | EV (125301, DCM, "Pre-coordinated Measurements") | 1 | M |  |  |
| 3 | >> | CONTAINS | INCLUDE | DTID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | U |  | $Measurement = DCID 12309 “Core Echo Strain Measurement”  $Preferred = DCID 12301 “Measurement Selection Reason” |
| 4 | > | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 5 | >> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason”  $Property = DCID 12311 “Echo Measured Strain Property” |

Modify Table TID 5300. Simplified Echo Procedure Report as follows

**Table TID 5300. Simplified Echo Procedure Report**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| … | | | | | | | | |
| 11 | >> | CONTAINS | INCLUDE | DTID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | M |  | $Measurement = DCID 12300 “Core Echo Measurement”  $Preferred = DCID 12301 “Measurement Selection Reason” |
| 12 | > | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 13 | >> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason” |
| … | | | | | | | | |
| 20 | >>> | CONTAINS | INCLUDE | DTID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | U |  | $Measurement = DCID 12300 “Core Echo Measurement”  $Preferred = DCID 12301 “Measurement Selection Reason” |
| 21 | >> | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 22 | >>> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated **Cardiac~~Echo~~** Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason” |
| … | | | | | | | | |

Modify TID 5301 Pre-coordinated Echo Measurement as follows

### TID 5301 Pre-coordinated Cardiac~~Echo~~ Measurement

This template codes numeric **cardiac~~echo~~** measurements where most of the details about the nature of the measurement have been pre-coordinated in the measurement code. In contrast, see TID 5302 “Post-coordinated **Cardiac~~Echo~~** Measurement”.

The pre-coordinated measurement code is provided when this Template is included from a parent Template.

**Table TID 5301. Parameters**

| **Parameter Name** | **Parameter Usage** |
| --- | --- |
| $Measurement | Coded term or Context Group for Concept Name of measurement |
| $Preferred | Flag the preferred value by indicating the reason it was selected as preferred. |

**Type:** **Non-Extensible**

**Order:** **Significant**

**Root:** **No**

**Table TID 5301. Pre-coordinated Cardiac~~Echo~~ Measurement**

…

**Content Item Descriptions**

|  |  |
| --- | --- |
| Row 2 | The reason that this value was selected as the preferred value for the measured concept.  The parent template may allow TID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” to be included multiple times with the same Measurement Concept Name, for example to allow multiple samples of the measurement.  A given Measurement Concept Name might appear only once in the instance, in which case this this row may or may not be present. A given Measurement Concept Name may appear multiple times, however this row shall not be present for more than one value of the given Measurement Concept Name. E.g. multiple measurements of (11706-9, LN, "Aortic Valve Peak Systolic Flow") may be present, but only one may be selected as preferred. |
| … | |

Modify Table TID 5300. Simplified Echo Procedure Report as follows

**Table TID 5300. Simplified Echo Procedure Report**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| … | | | | | | | | |
| 12 | > | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 13 | >> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated Echo Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason”  **$AnatomicSite = DCID 12305 “Basic Echo Anatomic Site”** |
| … | | | | | | | | |
| 21 | >> | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 22 | >>> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated Echo Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason”  **$AnatomicSite = DCID 12305 “Basic Echo Anatomic Site”** |
| … | | | | | | | | |

Modify Table TID 5240. Myocardial Strain Analysis

**Table TID 5240. Myocardial Strain Analysis**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| 1 |  |  | CONTAINER | DT (59776-5, LN, "Findings") | 1 | M |  |  |
| 2 | > | CONTAINS | CONTAINER | EV (125301, DCM, "Pre-coordinated Measurements") | 1 | M |  |  |
| 3 | >> | CONTAINS | INCLUDE | DTID 5301 “Pre-coordinated Echo Measurement” | 1-n | U |  | $Measurement = DCID 12309 “Core Echo Strain Measurement”  $Preferred = DCID 12301 “Measurement Selection Reason” |
| 4 | > | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 5 | >> | CONTAINS | INCLUDE | DTID 5302 “Post-coordinated Echo Measurement” | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason”  $Property = DCID 12311 “Echo Measured Strain Property”  **$AnatomicSite = DCID 12305 “Basic Echo Anatomic Site”** |

Modify TID 5302 Post-coordinated Echo Measurement as follows

### TID 5302 Post-coordinated Cardiac~~Echo~~ Measurement

This template codes numeric echo measurements where most of the details about the nature of the measurement have been post-coordinated in modifiers and acquisition context. In contrast, see TID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” .

This template is intended to be used for User-defined and Vendor-defined **Cardiac~~Echo~~** Measurements.

Several modifier rows are conditional and are omitted when the modifier concept is not significant for the measurement encoded in the item. When these modifiers are included by the sender, it indicates that the modifier concept is significant and receivers will generally treat the measurements differently than similar measurements sent that omit that modifier.

**Note**

*The codes in the CIDs referenced below were sufficient to accurately encode all the best practice echo measurements recommended by the ASE. If, however, a new code is needed to record a specific User-defined or Vendor-defined measurement, most of the CIDs are extensible. It is not unreasonable to expect that measurements might be made at other Finding Sites than those listed in CID 12305 “Basic Echo Anatomic Site” , or using Measurement Methods beyond those listed in CID 12227 “Echocardiography Measurement Method” .*

The concept modifiers in the template below were sufficient to accurately encode all the best practice echo measurements recommended by the ASE. Although TID 5302 “Post-coordinated **Cardiac~~Echo~~** Measurement” is extensible and adding new modifiers is not prohibited, the meaning and significance of such new modifiers will generally not be understood by receiving systems, delaying or preventing import of such measurements. Further, adding modifiers that replicate the meaning of an existing modifier is prohibited.

If such measurements cannot be encoded with the following structure, an implementation may choose to code the measurement in TID 5303 “Adhoc Measurement” , or to use TID 5200 “Echocardiography Procedure Report” instead of TID 5300 “Simplified Echo Procedure Report” .

**Table TID 5302. Parameters**

| **Parameter Name** | **Parameter Usage** |
| --- | --- |
| $Measurement | Coded term or Context Group for Concept Name of measurement |
| $Preferred | Flag the preferred value by indicating the reason it was selected as preferred. |
| $Property | Coded term or Context Group for the Measured Property. |
| **$AnatomicSite** | **Context Group for the measurement anatomic site.** |

**Type:** **Extensible**

**Order: Significant**

**Root:** **No**

**Table TID 5302. Post-coordinated Cardiac~~Echo~~ Measurement**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| … | | | | | | | | |
| 8 | > | HAS CONCEPT MOD | CODE | EV (363698007, SCT, "Finding Site") | 1 | M |  | **$AnatomicSite**  **~~DCID 12305 “Basic Echo Anatomic Site”~~** |
| … | | | | | | | | |
| 11 | > | HAS CONCEPT MOD | CODE | EV (260674002, SCT, "Flow Direction") | 1 | MC | IFF value of Row 9 = (44324008, SCT, "Hemodynamic Measurements") and the Flow Direction is significant for this measurement. | DCID 12306 “Echo Flow Direction” |
| 12 | > | HAS CONCEPT MOD | CODE | EV (370129005, SCT, "Measurement Method") | 1 | MC | IFF the Measurement Method is significant for this measurement. | DCID 12227 “Echocardiography Measurement Method” |
| 13 | > | HAS ACQ CONTEXT | CODE | EV (399264008, SCT, "Image Mode") | 1 | MC | IFF the Image Mode is significant for this measurement. | DCID 12224 “Ultrasound Image Mode” |
| 14 | > | HAS ACQ CONTEXT | CODE | EV (111031, DCM, "Image View") | 1 | MC | IFF the Image View is significant for this measurement. | DCID 12226 “Echocardiography Image View” |
| **14b** | **>** | **HAS ACQ CONTEXT** | **CODE** | **EV (newCODE123, DCM, "Transesophageal Echocardiography Scan Plane")** | **1** | **MC** | **IFF the Transesophageal Echocardiography Scan Plane is significant for this measurement.** | **DCID newCID13 “Transesophageal Echocardiography Scan Plane”** |
| 15 | > | HAS CONCEPT MOD | CODE | EV (272518008, SCT, "Cardiac Cycle Point") | 1 | MC | IFF the Cardiac Cycle Point is significant for this measurement. | DCID 12307 “Cardiac Phase and Time Point” |
| … | | | | | | | | |

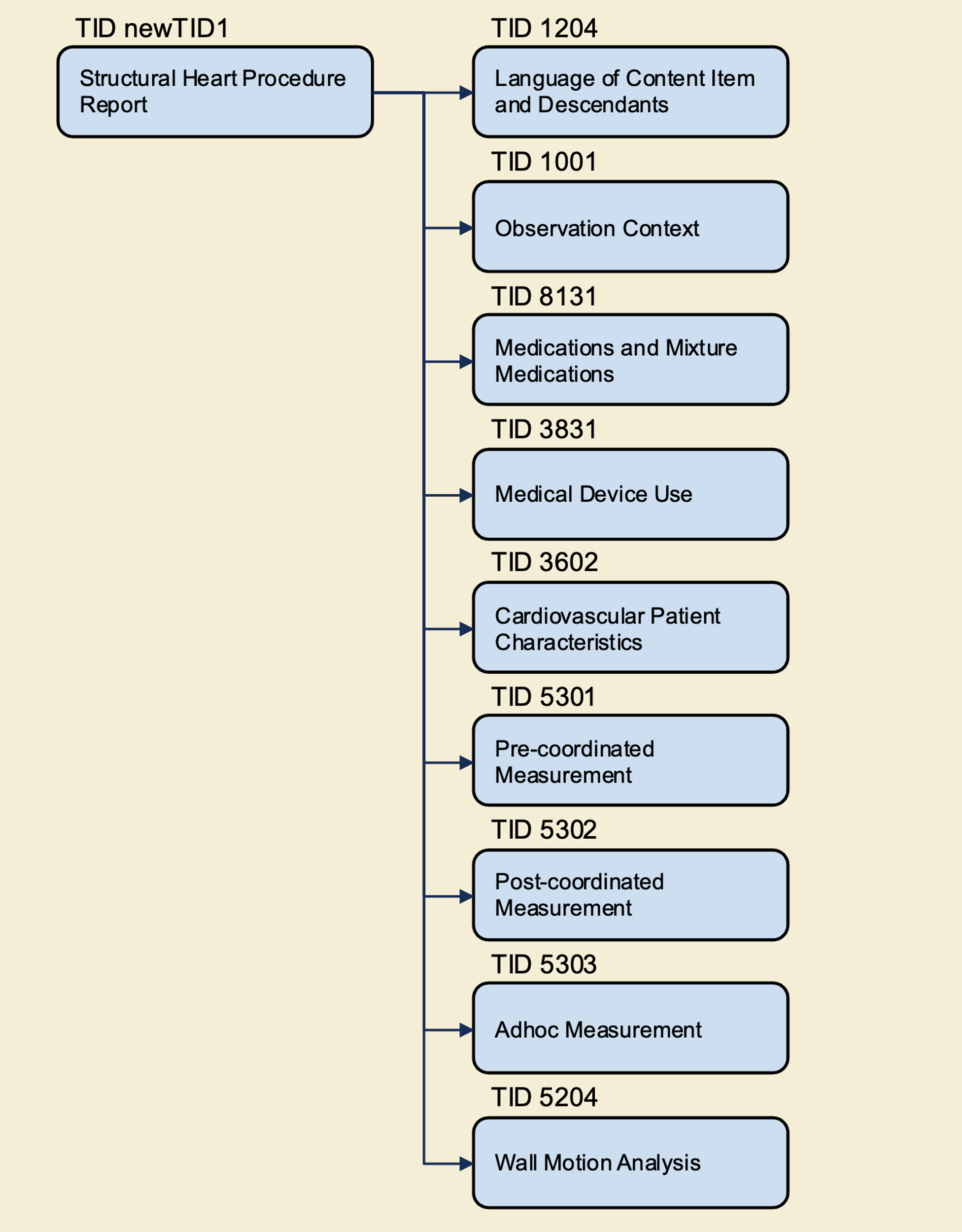
**Content Item Descriptions**

|  |  |
| --- | --- |
| … | |
| Row 3 | The reason that this value was selected as the preferred value for the measured concept.  The parent template may allow TID 5301 “Pre-coordinated **Cardiac~~Echo~~** Measurement” to be included multiple times with the same Measurement Concept Name, for example to allow multiple samples of the measurement.  A given Measurement Concept Name might appear only once in the instance, in which case this this row may or may not be present. A given Measurement Concept Name may appear multiple times, however this row shall not be present for more than one value of a given measured concept. E.g. multiple measurements of (11706-9, LN, "Aortic Valve Peak Systolic Flow") may be present, but only one may be selected as preferred. |
| … | |
| Row 8**-8a** | The finding site reflects the anatomical location where the measurement is taken.  CID 12305 “Basic Echo Anatomic Site” contains the codes which proved to be sufficient for mapping the full set of ASE standard measurements.  **CID newCID9 “Structural Heart Procedure Anatomic Site” contains codes sufficient for mapping STS/ACC TVT Registry measurements.**  It is recommended to use these locations unless a more detailed location is truly necessary. |
| … | |

Add the following TID to Part 16 Annex A:

# Structural Heart Procedure Templates

The templates that comprise the Structural Heart Procedure Templates Report are interconnected as in Figure A-xx.



**Figure A-xx. Structural Heart Procedure Template Structure**

### TID newTID1 Structural Heart Measurement Report

This template forms the top of a content tree that allows a device to describe the results of a periprocedural imaging associated with minimally invasive structural heart procedures during pre-operative assessment, intraprocedural assessment, or follow-up. While it mirrors the Simplified Echo Procedure Report, it is specifically designed for multimodality utilization, i.e., Echo, CT and MR.

This template does not include an Image Library. Image Content Items in the Echo Measurement templates (for example to indicate Source of Measurement) shall be included with by-value relationships, not with by-reference relationships.

Measurements in this template (except for the Wall Motion Analysis) are collected into one of three containers, each with a specific sub-template and constraints appropriate to the purpose of the container.

* Pre-coordinated Measurements (many taken from the STS/ACC TVT Registry).
* Post-coordinated Measurements
* Adhoc Measurements

**Type:** **Non-Extensible**

**Order: Significant**

**Root:** **Yes**

**Table newTID1. Structural Heart Measurement Report**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| 1 |  |  | CONTAINER | EV (newCODE4, DCM, "Structural Heart Measurement Report") | 1 | M |  |  |
| 2 | > | HAS CONCEPT MOD | INCLUDE | DTID 1204 “Language of Content Item and Descendants” | 1 | U |  |  |
| 3 | > | HAS OBS CONTEXT | INCLUDE | DTID 1001 “Observation Context” | 1 | M |  |  |
| 4 | > | CONTAINS | CONTAINER | DT (55111-9, LN, "Current Procedure Descriptions") | 1 | U |  |  |
| 5 | >> | CONTAINS | CODE | EV (121139, DCM, "Modality") | 1 | M |  | Shall be taken from Modality (0008,0060) in the Image Instances. |
| 6 | >> | CONTAINS | TEXT | DT (125203, DCM, "Acquisition Protocol") | 1-n | M |  |  |
| 7 | >> | CONTAINS | INCLUDE | DTID 8131 “Medications and Mixture Medications” | 1-n | U |  | $DrugAdministered = BCID newCID12. “Bradycardiac Agents” |
| 8 | >> | CONTAINS | NUM | EV (8867-4, LN, "Heart Rate") | 1 | U |  | UNITS = EV ({H.B.}/min, UCUM, "BPM") |
| 9 | > | CONTAINS | CONTAINER | EV (18785-6, LN, "Indications for Procedure") | 1 | U |  |  |
| 10 | >> | CONTAINS | CODE | EV (118797008, SCT, "Heart Procedure") | 1 | U |  | BCID newCID1. “Structural Heart Procedures” |
| 11 | >>> | HAS CONCEPT MOD | CODE | EV (121071, DCM, "Finding") | 1-n | U |  | DCID newCID11 “Indication for Structural Heart Procedure” |
| 12 | >>> | HAS CONCEPT MOD | TEXT | EV (121071, DCM, "Finding") | 1 | U |  |  |
| 13 | >>> | HAS CONCEPT MOD | CODE | EV (118578006, SCT, "Relative time") | 1 | U |  | DCID 61 “Time Relative to Procedure” |
| 14 | >>> | HAS CONCEPT MOD | INCLUDE | DTID 3831 “Medical Device Use” | 1 | U |  | $Device = BCID newCID2. “Structural Heart Devices” |
| 15 | > | CONTAINS | INCLUDE | DTID 3602 “Cardiovascular Patient Characteristics” | 1 | U |  |  |
| 16 | > | CONTAINS | CONTAINER | EV (125301, DCM, "Pre-coordinated Measurements") | 1 | M |  |  |
| 17 | >> | CONTAINS | INCLUDE | DTID 5301 “Pre-coordinated Cardiac Measurement” | 1-n | U |  | $Measurement = DCID newCID3 “Structural Heart Measurement”  $Preferred = DCID 12301 “Measurement Selection Reason” |
| 19 | > | CONTAINS | CONTAINER | EV (125302, DCM, "Post-coordinated Measurements") | 1 | M |  |  |
| 20 | >> | CONTAINS | INCLUDE | DTID 5302 Post-coordinated Cardiac Measurement | 1-n | U |  | $Preferred = DCID 12301 “Measurement Selection Reason”  $AnatomicSite = DCID newCID9 “Structural Heart Procedure Anatomic Site” |
| 21 | > | CONTAINS | CONTAINER | EV (125303, DCM, "Adhoc Measurements") | 1 | M |  |  |
| 22 | >> | CONTAINS | INCLUDE | DTID 5303 “Adhoc Measurement” | 1-n | U |  | $Property =DCID 12304 “Echo Measured Property” |
| 26 | > | CONTAINS | INCLUDE | DTID 5204 “Wall Motion Analysis” | 1-n | UC | IFF Row 5 value is “US” | $Procedure = DT (35757004, SCT, "Echocardiography for Determining Ventricular Contraction") |

**Content Item Descriptions**

|  |  |
| --- | --- |
| Row 4 | This container describes the periprocedural imaging during which the measurements were taken. |
| Row 6 | User-defined type of clinical acquisition protocol for creating images or image-derived measurements. May be taken from Protocol Name (0018,1030) or from Performed Procedure Step Description (0040,0254). |
| Row 7 | Bradycardic medications administered to lower the heart rate during the imaging study. |
| Row 8 | Heart rate during acquisition, i.e. after the administration of a bradycardiac agent. |
| Row 9 | This container provides details regarding the structural heart surgical procedure that is supported by the periprocedural imaging procedure described in Row 4. |
| Row 12 | A text string containing one or more sentences describing one or more indications, possibly with additional comments from the physician or technologist. |
| Row 13 | This row establishes the relative time between imaging procedure in Row 4 and the structural heart procedure in Row 10 (i.e. whether Row 4 is modified with "pre-", “intra-“ or "post"). |
| Row 17 | These are measurements from a standardized list of pre-coordinated codes. Measurements which do not correspond to the full semantics of one of the pre-coordinated codes in the Value Set Constraint can likely be encoded in Row 23 instead.  Multiple instances of the same measurement code may be present in the container. Each instance represents a different sample or derivation.  This template makes no requirement that any or all samples be sent. For example, a mean value of all the samples of a given measurement could be sent without sending all or any of the samples from which the mean was calculated. Device configuration and/or operator interactions determine what measurements are sent. |
| Row 19 | These are measurements that can be encoded using a standardized structure of post-coordinated codes. Measurements which correspond to the full semantics of one of the pre-coordinated codes in rows 17-21 should be encoded in there instead.  $Measurement shall be provided, but is not constrained to a CID.  Multiple instances of the same measurement code may be present in the container. Each instance represents a different sample or derivation.  This template makes no requirement that any or all samples be sent. For example, a mean value of all the samples of a given measurement could be sent without sending all or any of the samples from which the mean was calculated. Device configuration and/or operator interactions determine what measurements are sent. |
| Row 21 | These are adhoc measurements encoded with minimal semantics.  Row 19 can be used to encode measurements with more complete semantics.  $Units shall be provided, but is not constrained to a CID.  Device configuration and/or operator interactions determine what measurements are sent. |

Add the following CIDs to Part 16 Annex B:

### CID newCID1 Structural Heart Procedures

This context group includes codes that may be used to identify Structural Heart Procedures that may be referred to in an Observation Context.

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartProcedures**

**FHIR Keyword: dicom-cid-newCID1-StructuralHeartProcedures**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID1**

**Table CID newCID1. Structural Heart Procedures**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** |
| SCT | 1184601001 | Revision of transcatheter aortic valve implantation |  | C5568478 |
| SCT | 1217005008 | Bioprosthetic transcatheter aortic valve implantation |  | C5687705 |
| SCT | 720583008 | Transcatheter implantation of mitral valve |  | C4303983 |
| SCT | 1231449003 | Transcatheter repair of tricuspid valve |  | C5202507 |
| SCT | 1255141008 | Transcatheter annuloplasty of tricuspid valve |  | C5768806 |
| SCT | 1237589003 | Transcatheter repair of leaflet of tricuspid valve |  | C5768119 |
| SCT | 787162002 | Implantation of pulmonary valve prosthesis or synthetic device |  | C3161311 |
| SCT | 1231726001 | Bioprosthetic mitral valve prosthesis transcatheter implantation |  | C5689010 |
| SCT | 8069005 | Implantation of tricuspid valve prosthesis or synthetic device |  | C0190102 |
| UMLS | C0844084 | Percutaneous closure of atrial septal defect |  | C0844084 |
| UMLS | C3275093 | Left atrial appendage occlusion |  | C3275093 |
| UMLS | C2921037 | Implantation of mitral valve leaflet clip |  | C2921037 |

### CID newCID2 Structural Heart Devices

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartDevices**

**FHIR Keyword: dicom-cid-newCID2-StructuralHeartDevices**

**Type: Extensible**

**Version: 202xxxxx  
UID: 1.2.840.newUID2**

**Table CID** **newCID2. Structural Heart Devices**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Trade Name (Informative)** |
| DCM | newCODE1 | Left atrial appendage closure device |  |  |  |
| DCM | newCODE2 | Ball type Left atrial appendage closure device |  |  | WatchmanTM,  WaveCrest,  Conformal |
| DCM | newCODE3 | Ball and disk type left atrial appendage closure device |  |  | AmuletTM |
| SCT | 716779003 | Mitral annuloplasty transvalvular implant |  | C4274279 | Cardioband |
| SCT | 17107009 | Mitral valve prosthesis |  | C0182494 | Sapien 3, Tendyne, Tiara, Intrepid, CardiAQ |
| SCT | 464887003 | Mitral valve clip |  | C3881921 | MitraClipTM, Pascal |
| SCT | 1141607002 | Transcatheter biologic tricuspid valve prosthesis |  | C5545443 | Evoque |
| SCT | 703201004 | Tricuspid valve prosthesis |  | C1322659 |  |
| SCT | 860585001 | Transcatheter pulmonary valve bioprosthesis |  | C5395736 | MelodyTM |

### CID newCID3 Structural Heart Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartMeasurements**

**FHIR Keyword: dicom-cid-newCID3-StructuralHeartMeasurement**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID3**

**Table CID newCID3. Structural Heart Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| LN | 8277-6 | Body Surface Area |  | C0487992 | (m2, UCUM, "m2") |
| DCM | newCODE122 | Transseptal puncture height |  |  | (mm, UCUM, "mm") |
| *Include CID newCID4 “Structural Heart Aortic Valve Measurement”* | | | | |
| *Include CID newCID5 “Structural Heart Mitral Valve Measurement”* | | | | |
| *Include CID newCID6* “*Structural Heart Tricuspid Valve Measurement”* | | | | |
| *Include CID newCID7 “Structural Heart Echo Measurement”* | | | | |
| *Include CID newCID8 “Left Atrial Appendage Closure Measurement”* | | | | |

Editorial Note: New measurement codes throughout this supplement use a DCM Coding Scheme Designator, most of these will be proposed to LOINC before Final Text.

### CID newCID4 Structural Heart Aortic Valve Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartAorticValveMeasurement**

**FHIR Keyword: dicom-cid-newCID4-StructuralHeartAorticValveMeasurement**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID4**

**Table CID newCID4. Structural Heart Aortic Valve Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| DCM | newCODE6 | Aorta sinotubular junction area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE7 | Aortic annulus area |  | C2059685 | (mm, UCUM, "mm") |
| DCM | newCODE8 | Aortic annulus calcification severity |  |  | BCID 3716 “Severity” |
| DCM | newCODE9 | Aortic annulus max diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE10 | Aortic annulus min diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE11 | Aortic annulus perimeter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE12 | Aortic calcification volume |  |  | (mm3, UCUM, "mm3") |
| DCM | newCODE13 | Aortic commissures calcification severity |  |  | BCID 3716 “Severity” |
| DCM | newCODE16 | Aortic root height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE17 | Aortic sinotubular junction diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE19 | Aortic sinus of valsalva area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE20 | Aortic sinus of valsalva diameter |  | C2059455 | (mm, UCUM, "mm") |
| DCM | newCODE24 | Aortic valve coaptation length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE25 | Aortic valve noncoronary leaflet intercommissural angle |  |  | (deg, UCUM, "deg") |
| DCM | newCODE26 | Aortic valve right leaflet intercommissural angle |  |  | (deg, UCUM, "deg") |
| DCM | newCODE27 | Aortic valve left leaflet intercommissural angle |  |  | (deg, UCUM, "deg") |
| DCM | newCODE28 | Aortic valve noncoronary leaflet intercommissural distance |  |  | (mm, UCUM, "mm") |
| DCM | newCODE29 | Aortic valve right leaflet intercommissural distance |  |  | (mm, UCUM, "mm") |
| DCM | newCODE30 | Aortic valve left leaflet intercommissural distance |  |  | (mm, UCUM, "mm") |
| DCM | newCODE31 | Aortic valve left coronary leaflet height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE32 | Aortic valve left coronary leaflet length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE33 | Aortic valve noncoronary leaflet height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE34 | Aortic valve noncoronary leaflet length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE35 | Aortic valve right coronary leaflet height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE36 | Aortic valve right coronary leaflet length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE38 | Ascending Aorta diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE40 | Left main coronary ostium height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE43 | Left ventricular outflow tract calcification severity |  |  | BCID 3716 “Severity” |
| DCM | newCODE41 | Maximum aortic plaque thickness |  |  | (mm, UCUM, "mm") |
| DCM | newCODE42 | Right coronary artery ostium height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE44 | Right ventricular Internal diameter major axis diastole |  |  | (mm, UCUM, "mm") |
| DCM | newCODE46 | Right ventricular diastolic mid segment minor axis |  |  | (mm, UCUM, "mm") |
| DCM | newCODE48 | Right ventricular diastolic basal minor axis |  |  | (mm, UCUM, "mm") |

### CID newCID5 Structural Heart Mitral Valve Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartMitralValveMeasurement**

**FHIR Keyword: dicom-cid-newCID5-StructuralHeartMitralValveMeasurement**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID5**

**Table CID newCID5. Structural Heart Mitral Valve Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| DCM | newCODE50 | Mitral anterior leaflet A1 scallop length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE51 | Mitral anterior leaflet A2 scallop length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE124 | Mitral anterior leaflet A3 scallop length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE53 | Mitral anterior leaflet area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE54 | Aorto-mitral Inter annular angle |  |  | (deg, UCUM, "deg") |
| DCM | newCODE66 | Mitral commissure distance |  | C1185742 | (mm, UCUM, "mm") |
| DCM | newCODE71 | Mitral trigone-to-trigone distance |  |  | (mm, UCUM, "mm") |
| DCM | newCODE62 | Mitral annular excursion |  |  | (mm, UCUM, "mm") |
| DCM | newCODE72 | Mitral annulus anterolateral to posteromedial diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE73 | Mitral annulus anteroposterior diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE74 | Mitral annulus area |  |  | (mm, UCUM, "mm") |
| DCM | newCODE63 | Mitral annulus calcification severity |  |  | BCID 3716 “Severity” |
| DCM | newCODE77 | Mitral annulus commissural diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE60 | Mitral annulus diameter ratio |  |  | ({ratio}, UCUM, "ratio") |
| DCM | newCODE75 | Mitral annulus height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE64 | Mitral annulus nonplanarity angle |  |  | (deg, UCUM, "deg") |
| DCM | newCODE76 | Mitral annulus perimeter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE59 | Mitral valve coaptation length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE68 | Mitral valve interpapillary distance |  |  | (mm, UCUM, "mm") |
| DCM | newCODE108 | Anterolateral papillary muscle to the left trigone |  |  | (mm, UCUM, "mm") |
| DCM | newCODE70 | Posteromedial papillary muscle to the right trigone |  |  | (mm, UCUM, "mm") |
| DCM | newCODE78 | Mitral valve prolapse area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE79 | Mitral valve prolapse volume |  |  | (ml, UCUM, "ml") |
| DCM | newCODE80 | Mitral valve segment flail gap |  |  | (mm, UCUM, "mm") |
| DCM | newCODE81 | Mitral valve sphericity index |  |  | ({ratio}, UCUM, "ratio") |
| DCM | newCODE82 | Mitral valve tenting height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE96 | Mitral valve tenting area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE83 | Mitral valve tenting segment height A1-P1 |  |  | (mm, UCUM, "mm") |
| DCM | newCODE84 | Mitral valve tenting segment height A2-P2 |  |  | (mm, UCUM, "mm") |
| DCM | newCODE85 | Mitral valve tenting segment height A3-P3 |  |  | (mm, UCUM, "mm") |
| DCM | newCODE86 | Posterior mitral valve leaflet area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE87 | Posterior mitral valve leaflet length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE88 | Posterior mitral valve P1 leaflet scallop length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE89 | Posterior mitral valve P2 leaflet scallop length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE90 | Posterior mitral valve P3 leaflet scallop length |  |  | (mm, UCUM, "mm") |

### CID newCID6 Structural Heart Tricuspid Valve Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartTricuspidValveMeasurement**

**FHIR Keyword: dicom-cid-newCID5-StructuralHeartTricuspidValveMeasurement**

**Type: Extensible**

**Version: 202xxxxx  
UID: 1.2.840.newUID6**

**Table CID newCID6. Structural Heart Tricuspid Valve Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| DCM | newCODE94 | Tricuspid annulus area |  |  | (cm2, UCUM, "cm2") |
| DCM | newCODE92 | Tricuspid annulus area diastolic systolic ratio |  |  | (%, UCUM, "%") |
| DCM | newCODE93 | Tricuspid annulus perimeter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE95 | Tricuspid valve coaptation length |  |  | (mm, UCUM, "mm") |
| DCM | newCODE97 | Tricuspid valve major axis diastole |  |  | (mm, UCUM, "mm") |
| DCM | newCODE98 | Tricuspid valve minor axis |  |  | (mm, UCUM, "mm") |
| DCM | newCODE99 | Tricuspid valve sphericity index |  |  | (%, UCUM, "%") |
| DCM | newCODE100 | Tricuspid valve tenting height |  |  | (mm, UCUM, "mm") |
| DCM | newCODE101 | Tricuspid valve tenting volume |  |  | (ml, UCUM, "ml") |

### CID newCID7 Structural Heart Echo Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartEchoMeasurement**

**FHIR Keyword: dicom-cid-newCID7-StructuralHeartEchoMeasurement**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID7**

**Table CID newCID7. Structural Heart Echo Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| LN | 17997-8 | Anterior mitral valve leaflet length |  | C0801047 | (cm, UCUM, "cm") |
| LN | 79955-1 | Aorta sinotubular junction diameter at end systole by 2D |  | C4069750 | (cm, UCUM, "cm") |
| LN | 82339-3 | Aorta sinotubular junction diameter by 2D |  | C4298778 | (mm, UCUM, "mm") |
| LN | 82338-5 | Aorta sinotubular junction diameter by M-mode |  | C4285208 | (mm, UCUM, "mm") |
| LN | 79941-1 | Aortic regurgitant flow |  | C4071396 | (ml/s, UCUM, "ml/s") |
| LN | 79947-8 | Aortic regurgitation pressure half-time |  | C4069754 | (ms, UCUM, "ms") |
| LN | 79948-6 | Aortic regurgitation vena contracta width |  | C4069753 | (cm, UCUM, "cm") |
| LN | 79950-2 | Aortic regurgitation volume (Continuity VTI) |  | C4070676 | (ml, UCUM, "ml") |
| LN | 79951-0 | Aortic regurgitation volume (PISA) |  | C4070675 | (ml, UCUM, "ml") |
| LN | 18016-6 | Aortic valve annulus diameter |  | C0801066 | (cm, UCUM, "cm") |
| LN | 79940-3 | Aortic valve annulus diameter at end systole |  | C4070180 | (cm, UCUM, "cm") |
| LN | 79958-5 | Aortic valve area (Continuity VTI) |  | C4069747 | (cm2, UCUM, "cm2") |
| LN | 77909-0 | Aortic valve Effective regurgitant orifice area (PISA) |  | C4036554 | (cm2, UCUM, "cm2") |
| LN | 77910-8 | Aortic valve Effective regurgitant orifice area (Volumetric) |  | C4036553 | (cm2, UCUM, "cm2") |
| LN | 17996-0 | Aortic valve maximum cusp separation length |  | C0801046 | (mm, UCUM, "mm") |
| LN | 18093-5 | Aortic valve orifice area (Continuity Vmax+Area) |  | C0801142 | (cm2, UCUM, "cm2") |
| LN | 18094-3 | Aortic valve orifice area (Continuity Vmax+Diameter) |  | C0801143 | (cm2, UCUM, "cm2") |
| LN | 18091-9 | Aortic valve orifice area (Continuity VTI+Area) |  | C0801140 | (cm2, UCUM, "cm2") |
| LN | 18092-7 | Aortic valve orifice area (Continuity VTI+Diameter) |  | C0801141 | (cm2, UCUM, "cm2") |
| LN | 18090-1 | Aortic valve orifice area (Continuity) |  | C0801139 | (cm2, UCUM, "cm2") |
| LN | 18089-3 | Aortic valve orifice area |  | C0801138 | (cm2, UCUM, "cm2") |
| LN | 18104-0 | Aortic valve pressure half time |  | C0801153 | (ms, UCUM, "ms") |
| LN | 18105-7 | Aortic valve regurgitant blood flow pressure half-time |  | C0801154 | (ms, UCUM, "ms") |
| LN | 77908-2 | Aortic valve vena contracta diameter |  | C4036555 | (cm, UCUM, "cm") |
| LN | 18012-5 | Ascending thoracic aorta diameter |  | C0801062 | (cm, UCUM, "cm") |
| LN | 79966-8 | Ascending thoracic aorta diameter during systole by 2D |  | C4069741 | (cm, UCUM, "cm") |
| LN | 18013-3 | Descending aortic diameter |  | C0801063 | (cm, UCUM, "cm") |
| LN | 79981-7 | Left atrial end systolic volume biplane (area-length) |  | C4069726 | (ml, UCUM, "ml") |
| LN | 79982-5 | Left atrial end systolic volume biplane (area-length) / BSA |  | C4069725 | (ml/m2, UCUM, "ml/m2") |
| LN | 79983-3 | Left atrial end systolic volume biplane (MOD) |  | C4069724 | (ml, UCUM, "ml") |
| LN | 79984-1 | Left atrial end systolic volume biplane (MOD) / BSA |  | C4069723 | (ml/m2, UCUM, "ml/m2") |
| LN | 79985-8 | Left atrial end systolic volume single plane 2C (MOD) |  | C4069722 | (ml, UCUM, "ml") |
| LN | 79986-6 | Left atrial end systolic volume single plane 4C (MOD) |  | C4069721 | (ml, UCUM, "ml") |
| LN | 24526-6 | Left ventricular cardiac output |  | C0881769 | (l/min, UCUM, "l/min") |
| LN | 93649-2 | Left ventricular cardiac output (biplane area-length) |  | C5212121 | (l/min, UCUM, "l/min") |
| LN | 20204-4 | Left ventricular cardiac output (biplane ellipse) |  | C0803019 | (l/min, UCUM, "l/min") |
| LN | 20205-1 | Left ventricular cardiac output (bullet) |  | C0803020 | (l/min, UCUM, "l/min") |
| LN | 76565-1 | Left ventricular cardiac output (calculated) |  | C4037718 | (l/min, UCUM, "l/min") |
| LN | 76567-7 | Left ventricular cardiac output (cube) |  | C4037716 | (l/min, UCUM, "l/min") |
| LN | 20206-9 | Left ventricular cardiac output (cubed) |  | C0803021 | (l/min, UCUM, "l/min") |
| LN | 76571-9 | Left ventricular cardiac output (Gibson) |  | C4037712 | (l/min, UCUM, "l/min") |
| LN | 20207-7 | Left ventricular cardiac output (LVOT) |  | C0803022 | (l/min, UCUM, "l/min") |
| LN | 20208-5 | Left ventricular cardiac output (modified biplane) |  | C0803023 | (l/min, UCUM, "l/min") |
| LN | 20212-7 | Left ventricular cardiac output (single plane ellipse) |  | C0803027 | (l/min, UCUM, "l/min") |
| LN | 76569-3 | Left ventricular cardiac output (Teichholz) |  | C4037714 | (l/min, UCUM, "l/min") |
| LN | 93647-6 | Left ventricular cardiac output 2C (area-length ) |  | C5212119 | (l/min, UCUM, "l/min") |
| LN | 93650-0 | Left ventricular cardiac output 2C (MOD) |  | C5212122 | (l/min, UCUM, "l/min") |
| LN | 81390-7 | Left ventricular cardiac output 3D |  | C4265387 | (l/min, UCUM, "l/min") |
| LN | 93648-4 | Left ventricular cardiac output 4C (area-length) |  | C5212120 | (l/min, UCUM, "l/min") |
| LN | 93651-8 | Left ventricular cardiac output 4C (MOD) |  | C5212123 | (l/min, UCUM, "l/min") |
| LN | 76564-4 | Left ventricular cardiac output M-mode (calculated) |  | C4037719 | (l/min, UCUM, "l/min") |
| LN | 76566-9 | Left ventricular cardiac output M-mode (cube) |  | C4037717 | (l/min, UCUM, "l/min") |
| LN | 76570-1 | Left ventricular cardiac output M-mode (Gibson) |  | C4037713 | (l/min, UCUM, "l/min") |
| LN | 76568-5 | Left ventricular cardiac output M-mode (Teichholz) |  | C4037715 | (l/min, UCUM, "l/min") |
| LN | 93632-8 | Left ventricular outflow tract/Aortic valve VTI |  | C5212102 | (%, UCUM, "%") |
| LN | 80032-6 | Left ventricular posterior wall diastolic thickness |  | C4069662 | (cm, UCUM, "cm") |
| LN | 80031-8 | Left ventricular posterior wall diastolic thickness M-mode |  | C4069663 | (cm, UCUM, "cm") |
| LN | 93663-3 | Left ventricular sphericity index end diastole |  | C5212135 | ({ratio}, UCUM, "ratio") |
| LN | 20324-0 | Left ventricular stroke volume (aortic root calculated) |  | C0803139 | (ml, UCUM, "ml") |
| LN | 80050-8 | Mitral annulus diastolic diameter - A2C |  | C4069644 | (cm, UCUM, "cm") |
| LN | 80051-6 | Mitral annulus diastolic diameter - A4C |  | C4069643 | (cm, UCUM, "cm") |
| LN | 80052-4 | Mitral annulus diastolic diameter - PLAX |  | C4069642 | (cm, UCUM, "cm") |
| LN | 80053-2 | Mitral annulus VTI |  | C4069641 | (cm, UCUM, "cm") |
| LN | 80059-9 | Mitral regurgitation PISA radius |  | C4069635 | (cm, UCUM, "cm") |
| LN | 80061-5 | Mitral regurgitation vena contracta width |  | C4069633 | (cm, UCUM, "cm") |
| LN | 20264-8 | Mitral valve annulus area |  | C0803079 | (cm2, UCUM, "cm2") |
| LN | 18017-4 | Mitral valve annulus diameter |  | C0801067 | (cm, UCUM, "cm") |
| LN | 29448-8 | Mitral valve effective regurgitant orifice area (PISA) |  | C0944898 | (cm2, UCUM, "cm2") |
| LN | 77914-0 | Mitral valve effective regurgitant orifice area (volumetric) |  | C4036549 | (cm2, UCUM, "cm2") |
| LN | 80073-0 | Mitral valve mean gradient |  | C4069625 | (mm[Hg], UCUM, "mmHg") |
| LN | 77913-2 | Mitral valve vena contracta diameter |  | C4036550 | (cm, UCUM, "cm") |
| LN | 59101-6 | Pulmonary Artery Pressure using Accel Time |  | C2923436 | (ms, UCUM, "ms") |
| LN | 82341-9 | Right ventricular Intrachamber systolic pressure |  | C4298777 | (mm[Hg], UCUM, "mmHg") |
| LN | 77903-3 | Tricuspid Annular Plane Systolic Excursion |  | C4036560 | (cm, UCUM, "cm") |
| LN | 80091-2 | Tricuspid annulus diameter end diastolic |  | C4069607 | (cm, UCUM, "cm") |
| LN | 18023-2 | Tricuspid valve annulus diameter |  | C0801073 | (cm, UCUM, "cm") |
| LN | 20344-8 | Tricuspid valve annulus region crossection area |  | C0803159 | (cm2, UCUM, "cm2") |
| LN | 79922-1 | Tricuspid valve a-prime Vmax |  | C4069769 | (cm/s, UCUM, "cm/s") |
| LN | 81093-7 | Tricuspid valve effective regurgitant orifice area (PISA) |  | C4265686 | (mm2, UCUM, "mm2") |
| LN | 81094-5 | Tricuspid valve effective regurgitant orifice area (Volumetric) |  | C4265685 | (mm2, UCUM, "mm2") |
| LN | 79924-7 | Tricuspid valve e-prime Vmax |  | C4069767 | (cm/s, UCUM, "cm/s") |
| LN | 79926-2 | Tricuspid valve s-prime Vmax |  | C4069765 | (cm/s, UCUM, "cm/s") |

### CID newCID8 Left Atrial Appendage Closure Measurement

The​ Units column contains the proper UCUM representation of the recommended units for the measured property.​

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: LeftAtrialAppendageClosureMeasurement**

**FHIR Keyword: dicom-cid-newCID8-LeftAtrialAppendageClosureMeasurement**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID8**

**Table** **CID newCID8. Left Atrial Appendage Closure Measurement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** | **Units** |
| DCM | newCODE108 | Left atrial appendage closure device circumference |  |  | (mm, UCUM, "mm") |
| DCM | newCODE112 | Left atrial appendage closure device compression |  |  | (%, UCUM, "%") |
| DCM | newCODE109 | Left atrial appendage closure device diameter |  |  | (mm, UCUM, "mm") |
| DCM | newCODE110 | Left atrial appendage closure device size |  |  | (mm, UCUM, "mm") |
| DCM | newCODE115 | Left atrial appendage depth |  |  | (mm, UCUM, "mm") |
| DCM | newCODE114 | Left atrial appendage landing zone |  |  | (mm, UCUM, "mm") |
| DCM | newCODE120 | Left atrial appendage major axis |  |  | (mm, UCUM, "mm") |
| DCM | newCODE121 | Left atrial appendage minor axis |  |  | (mm, UCUM, "mm") |
| DCM | newCODE116 | Left atrial appendage ostium perimeter |  |  | (mm, UCUM, "mm") |

### CID newCID9 Structural Heart Procedure Anatomic Site

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: StructuralHeartProcedureAnatomicSite**

**FHIR Keyword: dicom-cid-newCID9-StructuralHeartProcedureAnatomicSite**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID9**

**Table CID newCID9. Structural Heart Procedure Anatomic Site**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** |
| SCT | 57034009 | Aortic arch | T-42300 | C0003489 |
| SCT | 443167003 | Aortic sinotubular junction | T-42102 | C2733424 |
| SCT | 443167003 | Aortic sinotubular junction | T-42102 | C2733424 |
| SCT | 34202007 | Aortic valve | T-35400 | C0003501 |
| SCT | 46396001 | Aortic valve commissure |  | C0225964 |
| SCT | 81797008 | Aortic valve cusp |  | C0225958 |
| SCT | 77583004 | Aortic valve ring | T-35410 | C0225957 |
| SCT | 77583004 | Aortic valve ring | T-35410 | C0225957 |
| SCT | 54247002 | Ascending aorta | T-42100 | C0003956 |
| SCT | 36371001 | Left Sinus of Valsalva | T-42220 | C0226017 |
| SCT | 89093001 | Right Sinus of Valsalva | T-42210 | C0226016 |
| SCT | 81128002 | Structure Sinus of Valsalva | T-42200 | C0037197 |
| SCT | 58095006 | Interatrial septum structure | T-32150 | C0225836 |
| SCT | 82471001 | Left atrium | T-32300 | C0225860 |
| SCT | 33626005 | Left auricular appendage | T-32310 | C0225861 |
| DCM | newCODE5 | Ostium of Left Auricular Appendage |  |  |
| SCT | 59438005 | Left anterior descending coronary artery | T-43110 | C0226032 |
| SCT | 3227004 | Left main coronary artery | T-43107 | C0226031 |
| SCT | 87878005 | Left ventricle | T-32600 | C0225897 |
| SCT | 13418002 | Left ventricle outflow tract | T-32650 | C0225912 |
| SCT | 21498007 | Anterior mitral valve leaflet |  | C0225950 |
| SCT | 399086000 | Lateral mitral annulus | G-0392 | C1302198 |
| SCT | 399093001 | Medial mitral annulus | G-0391 | C1302199 |
| SCT | 65197004 | Mitral annulus | T-35310 | C0225947 |
| SCT | 91134007 | Mitral valve | T-35300 | C0026264 |
| SCT | 19198003 | Mitral valve commissure |  | C0225954 |
| SCT | 46807008 | Mitral valve leaflet |  | C0225949 |
| SCT | 57793009 | Posterior mitral valve leaflet |  | C0225951 |
| SCT | 81040000 | Pulmonary artery | T-44000 | C0034052 |
| SCT | 73829009 | Right atrium | T-32200 | C0225844 |
| SCT | 589001 | Interventricular septum | T-32410 | C0225870 |
| SCT | 53085002 | Right ventricle | T-32500 | C0225883 |
| SCT | 85235006 | Left subclavian artery | T-46120 | C0226262 |
| SCT | 29700009 | Right subclavian artery | T-46110 | C0226261 |
| SCT | 113259005 | Tricuspid annulus | T-35110 | C0225926 |
| SCT | 46030003 | Tricuspid valve | T-35100 | C0040960 |
| SCT | 3462006 | Tricuspid valve commissure |  | C0225933 |
| *Include CID newCID10 ”Peripheral Access Anatomic Site”* | | | |

### CID newCID10 Peripheral Access Anatomic Site

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: PeripheralAccessAnatomicSite**

**FHIR Keyword: dicom-cid-newCID10-PeripheralAccessAnatomicSite**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID10**

**Table CID newCID10. Peripheral Access Anatomic Site**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** |
| SCT | 69833005 | Right femoral artery | T-47410 | C0226447 |
| SCT | 113270003 | Left femoral artery | T-47420 | C0226448 |
| SCT | 85235006 | Left subclavian artery | T-46120 | C0226262 |
| SCT | 29700009 | Right subclavian artery | T-46110 | C0226261 |

### CID newCID11 Indication for Structural Heart Procedure

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: IndicationForStructuralHeartProcedure**

**FHIR Keyword: dicom-cid-newCID11-IndicationForStructuralHeartProcedure**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID11**

**Table CID newCID11. Indication for Structural Heart Procedure**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** |
| SCT | 60573004 | Aortic stenosis | D3-29021 | C0003507 |
| SCT | 79619009 | Mitral stenosis | D3-29011 | C0026269 |
| SCT | 11851006 | Mitral valve disease | D3-29010 | C0026265 |
| SCT | 79619009 | Mitral stenosis | D3-29011 | C0026269 |
| SCT | 48724000 | Mitral regurgitation | D3-29012 | C0026266 |
| SCT | 373116009 | Acute mitral regurgitation | D3-29096 | C1298807 |
| SCT | 409712001 | Mitral valve prolapse | D3-1081C | C0026267 |
| SCT | 195020003 | Hypertrophic cardiomyopathy without obstruction | D3-20003 | C0340425 |
| SCT | 20721001 | Tricuspid valve disease | D3-29040 | C0264882 |
| SCT | 111287006 | Tricuspid regurgitation | D3-29042 | C0040961 |
| SCT | 49915006 | Tricuspid valve stenosis |  | C0040963 |
| SCT | 409712001 | Mitral valve prolapse | D3-1081C | C0026267 |
| SCT | 8722008 | Aortic valve disease | D3-29020 | C1260873 |
| SCT | 60573004 | Aortic stenosis | D3-29021 | C0003507 |
| SCT | 194983005 | Aortic insufficiency | D3-29025 | C0340377 |
| SCT | 60234000 | Aortic regurgitation |  | C0003504 |
| SCT | 60573004 | Aortic valve stenosis |  | C0003507 |
| SCT | 70142008 | Atrial septal defect | D4-31220 | C0018817 |
| SCT | 76267008 | Pulmonic valve disease | D3-29050 | C0034087 |
| SCT | 56786000 | Pulmonic valve stenosis | D3-29051 | C0034089 |
| SCT | 91434003 | Pulmonic valve regurgitation |  | C0034088 |
| SCT | 30288003 | Ventricular septal defect | D4-31150 | C0018818 |
| UMLS | C4015487 | Left atrial dilation |  | C4015487 |
| SCT | 275514001 | Impaired left ventricular function | C0242698 | C1277291 |
| SCT | 49436004 | Atrial fibrillation | D3-31520 | C0004238 |
| SCT | 135877001 | Stroke risk |  | C1277291 |
| UMLS | C3468959 | Intolerance to anticoagulation |  | C3468959 |

### CID newCID12 Bradycardiac Agents

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: BradyCardiacAgents**

**FHIR Keyword: dicom-cid-newCID12-BradyCardiacAgents**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID12**

**Table CID newCID12. Bradycardiac Agents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-RT ID** | **UMLS Concept Unique ID** |
| SCT | 33252009 | Beta blocker | C-80135 | C0001645 |
| SCT | 48698004 | Calcium channel blocker | C-80160 | C0006684 |
| SCT | 372700007 | Nitrate vasodilator | F-618B5 | C0360716 |

### CID newCID13 Transesophageal Echocardiography Scan Planes

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Keyword: TransesophagealEchocardiographyScanPlanes**

**FHIR Keyword: dicom-cid-newCID5-TransesophagealEchocardiographyScanPlanes**

**Type: Extensible**

**Version: 202xxxxx**

**UID: 1.2.840.newUID13**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** |
| --- | --- | --- |
| DCM | newCODE104 | 0 degree scan plane |
| DCM | newCODE105 | 45 degree scan plane |
| DCM | newCODE106 | 90 degree scan plane |
| DCM | newCODE107 | 135 degree scan plane |

Add the following Definitions to Annex D

*Not for reviewers: Figures are included to facilitate public comment and will not be included in final text. Figures include a hyperlink to their source.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding Scheme Designator** | | **Code Value** | **Code Meaning** | **Definition** |
| … | | | | |
| DCM | newCODE4 | | Structural Heart Measurement Report | A report containing the quantitative results of human or machine analysis of periprocedural imaging related to transcatheter structural heart procedures. |
| DCM | newCODE123 | | Transesophageal Echocardiography Scan Plane | The specific orientation of a transesophageal transducer during echocardiography imaging. |
| DCM | newCODE104 | | 0 degree scan plane | Baseline orientation of the transesophageal transducer; a transverse plane directed anteriorly from the esophagus.    *Note to reviewers:* ***PC Figure 15*** |
|  |  | | 60 degree scan plane |  |
| DCM | newCODE105 | | 45 degree scan plane | Orientation of the transesophageal transducer 45 degrees counterclockwise from the 0 degree scan plane.  *Note to reviewers: See* ***PC Figure 15*** |
| DCM | newCODE106 | | 90 degree scan plane | Orientation of the transesophageal transducer 90 degrees counterclockwise from the 0 degree scan plane.  *Note to reviewers: See* ***PC Figure 15*** |
| DCM | newCODE107 | | 135 degree scan plane | Orientation of the transesophageal transducer 135 degrees counterclockwise from the 0 degree scan plane.  *Note to reviewers: See* ***PC Figure 15*** |
| DCM | newCODE3 | | Ball and disk type left atrial appendage closure device | A device, in the form of a disk and cylindrical lobe connected by a central waist, for sealing off a left atrium appendage. |
| DCM | newCODE2 | | Ball type left atrial appendage closure device | A spherical device for sealing off a left atrium appendage. |
| DCM | newCODE1 | | Left atrial appendage closure device | A device for sealing off a left atrium appendage. |
| DCM | newCODE5 | | Ostium of Left Auricular Appendage | The anatomical orifice connecting the left atrial appendage to the left atrium of the heart. |
| DCM | newCODE122 | | Transseptal puncture height | The distance from the mitral leaflets to the level of the transseptal puncture measured during systole in a four-chamber view, with the measurement line drawn parallel to the atrial septum, using any method. |
| DCM | newCODE6 | | Aorta sinotubular junction area | The cross-sectional area of the ascending aorta measured between the aortic sinuses of Valsalva and normal tubular configuration of the aorta during diastole in 2D or 3D, in the long axis view, using any method. |
| DCM | newCODE7 | | Aortic annulus area | The area within the annulus of the aortic valve measured during systole, in a short axis view at the level of the annulus of the aortic valve, using any method.    *Note to reviewers:* ***PC Figure 7*** |
| DCM | newCODE8 | | Aortic annulus calcification severity | The qualitative severity of calcification of the annulus of the aortic valve, evaluated during systole, in any view at the level of the annulus of the aortic valve. |
| DCM | newCODE9 | | Aortic annulus max diameter | The widest diameter of the annulus of the aortic valve measured at systole, in a short axis view at the level of the annulus of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 7*** |
| DCM | newCODE10 | | Aortic annulus min diameter | The narrowest diameter of the annulus of the aortic valve measured at systole, in a short axis view at the level of the annulus of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 7*** |
| DCM | newCODE11 | | Aortic annulus perimeter | The length of the perimeter of the annulus of the aortic valve measured at systole, in a short axis view at the level of the annulus of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 7*** |
| DCM | newCODE12 | | Aortic calcification volume | The volume of calcification of the annulus of the aortic valve, evaluated during systole, in a short axis view at the level of the annulus of the aortic valve, using a qualitative method. |
| DCM | newCODE13 | | Aortic commissures calcification severity | The qualitative severity of calcification of the commissures of the aortic valve, evaluated at any time during the cardiac cycle, in any view at the level of the annulus of the aortic valve.  .  [Aortic Valve Commissures Echo](https://www.cardioserv.net/echo-aortic-valve-anatomy/)  *Note to reviewers:* ***PC Figure 20*** |
| DCM | newCODE16 | | Aortic root height | The distance from the aortic annulus to the sinotubular junction measured during diastole in the long axis view, using any method.    *Note to reviewers:* ***PC Figure 2*** |
| DCM | newCODE17 | | Aortic sinotubular junction diameter | The diameter of the ascending aorta measured at the level of the sinotubular junction during diastole, in any view, using any method.  *Note to reviewers: See* ***PC Figure 2*** |
| DCM | newCODE19 | | Aortic sinus of valsalva area | The area within the sinus of valsalva measured during diastole, in a short axis view, at the level of the sinus of valsalva, using any method.  *Note to reviewers: See* ***PC Figure 2*** |
| DCM | newCODE20 | | Aortic sinus of valsalva diameter | A diameter within the sinus of valsalva measured during diastole, in a short axis view, at the level of the sinus of valsalva, using any method.  *Note to reviewers: See* ***PC Figure 2*** |
| DCM | newCODE24 | | Aortic valve coaptation length | The length of coaptation (where the aortic valve leaflets are in contact), measured during diastole in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE25 | | Aortic valve noncoronary leaflet intercommissural angle | The angle between the two commissures of the noncoronary leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.    *Note to reviewers:* ***PC Figure 6*** |
| DCM | newCODE26 | | Aortic valve right leaflet intercommissural angle | The angle between the two commissures of the right leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 6*** |
| DCM | newCODE27 | | Aortic valve left leaflet intercommissural angle | The angle between the two commissures of the left leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 6*** |
| DCM | newCODE28 | | Aortic valve noncoronary leaflet intercommissural distance | The straight-line distance between the two commissures of the left leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.    *Note to reviewers:* ***PC Figure 12*** |
| DCM | newCODE29 | | Aortic valve right leaflet intercommissural distance | The straight-line distance between the two commissures of the right leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE30 | | Aortic valve left leaflet intercommissural distance | The straight-line distance between the two commissures of the left leaflet of the aortic valve measured during diastole, in a short axis view at the level of the aortic valve, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE31 | | Aortic valve left coronary leaflet height | The perpendicular distance from the plane of the annulus to the tip of the left coronary leaflet measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE32 | | Aortic valve left coronary leaflet length | The distance along the surface of the left coronary leaflet from the tip to the hinge point of the leaflet to the aortic annulus, measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE33 | | Aortic valve noncoronary leaflet height | The perpendicular distance from the plane of the annulus to the tip of the noncoronary leaflet measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE34 | | Aortic valve noncoronary leaflet length | The distance along the surface of the noncoronary leaflet from the tip to the hinge point of the leaflet to the aortic annulus, measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE35 | | Aortic valve right coronary leaflet height | The perpendicular distance from the plane of the annulus to the tip of the right coronary leaflet measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE36 | | Aortic valve right coronary leaflet length | The distance along the surface of the right coronary leaflet from the tip to the hinge point of the leaflet to the aortic annulus, measured during diastole, in a long axis view, using any method.  *Note to reviewers: See* ***PC Figure 12*** |
| DCM | newCODE38 | | Ascending Aorta diameter | The diameter within the ascending aorta measured during diastole in 2D, in any view at the level of the right pulmonary artery, using any method.  *Note to reviewers: See* ***PC Figure 2*** |
| DCM | newCODE40 | | Left main coronary ostium height | The distance between the aortic annulus and the left main coronary ostium measured at their closest points, during systole, in a long axis view, using any method. |
| DCM | newCODE43 | | Left ventricular outflow tract calcification severity | The qualitative severity of calcification of the left ventricular outflow tract, evaluated at any time during the cardiac cycle and in any view, from the annular plane to 5 mm below. |
| DCM | newCODE41 | | Maximum aortic plaque thickness | The maximum thickness of the largest atherosclerotic plaque deposit found within the ascending aorta, measured during systole, in the view that demonstrates the thickest plaque, using any appropriate imaging method |
| DCM | newCODE42 | | Right coronary artery ostium height | The distance between the aortic annulus and the right main coronary ostium measured at their closest points, during systole, in a long axis view, using any method. |
| DCM | newCODE44 | | Right ventricle diastolic major axis | The internal longitudinal length from the apex of the right ventricle to the tricuspid annulus, measured during diastole, in a four-chamber view, using any method.    *Note to reviewers:* ***PC Figure 4*** *(RVD3)* |
| DCM | newCODE46 | | Right ventricular diastolic mid segment minor axis | The internal diameter of the right ventricle from the interventricular septum to the free wall, measured at the level of the papillary muscles during diastole, in a four-chamber view, using any method.  *Note to reviewers: See* ***PC Figure 4*** *(RVD2)* |
| DCM | newCODE48 | | Right ventricular diastolic basal minor axis | The internal diameter of the right ventricle from the interventricular septum to the free wall, measured in the basal third of the right ventricle during diastole, in a four-chamber view, using any method.  *Note to reviewers: See* ***PC Figure 4*** *(RVD1)* |
| DCM | newCODE50 | | Mitral anterior leaflet A1 scallop length | The distance along the hinge line of the A1 scallop of the anterior leaflet of the mitral valve, measured during systole, in the long axis view, using any method.    *Note to reviewers:* ***PC Figure 14*** |
| DCM | newCODE51 | | Mitral anterior leaflet A2 scallop length | The distance along the hinge line of the A2 scallop of the anterior leaflet of the mitral valve, measured during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE124 | | Mitral anterior leaflet A3 scallop length | The distance along the hinge line of the A3 scallop of the anterior leaflet of the mitral valve, measured during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE53 | | Mitral anterior leaflet area | The area of the atrial surface of the anterior leaflet of the mitral valve measured during systole, in a 3D en face view of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE54 | | Aorto-mitral inter annular angle | The angle between the plane passing through the aortic annulus and the plane passing through the mitral annulus measured during systole, in the long axis view, using any method.  [Note the angle between mitral annulus trajectory (MAT) and LV long axis...  | Download Scientific Diagram](https://www.researchgate.net/figure/Note-the-angle-between-mitral-annulus-trajectory-MAT-and-LV-long-axis-LVLA-Green_fig1_329275322)  *Note to reviewers:* ***PC Figure 5*** |
| DCM | newCODE66 | | Mitral commissure distance | The straight-line distance between the two commissures of the anterior and posterior leaflets of the mitral valve measured during diastole, in a two-chamber view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE71 | | Mitral trigone-to-trigone distance | The straight-line distance between a point in the right trigone region of the mitral annulus and a point in the left trigone region of the mitral annulus, measured during systole, in a 3D en face view of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 19*** |
| DCM | newCODE62 | | Mitral annular excursion | The longitudinal displacement of the plane of the mitral annulus over the course of a cardiac cycle, measured any view, using any method. |
| DCM | newCODE72 | | Mitral annulus anterolateral to posteromedial diameter | The diameter of the annulus of the mitral valve measured from the anterolateral aspect to the posteromedial aspect, during systole, in a 3D en face view of the mitral valve, using any method.    *Note to reviewers:* ***PC Figure 8*** |
| DCM | newCODE73 | | Mitral annulus anteroposterior diameter | The diameter of the annulus of the mitral valve measured from the anterior aspect to the posterior aspect, during systole, in the short axis view at the level of the mitral annulus, using any method.  *Note to reviewers: See* ***PC Figure 8*** |
| DCM | newCODE74 | | Mitral annulus area | The area within the annulus of the mitral valve measured during systole, in a short axis view at the level of the annulus of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 8*** |
| DCM | newCODE63 | | Mitral annulus calcification severity | The qualitative severity of calcification of the annulus of the mitral valve, evaluated during diastole, in any view, at the level of the annulus of the mitral valve. |
| DCM | newCODE77 | | Mitral annulus commissural diameter | The diameter of the annulus of the mitral valve at the level of the commissures of the annulus, measured during systole, in a 3D en face view of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 8*** |
| DCM | newCODE60 | | Mitral annulus diameter ratio | The ratio of the anteroposterior diameter of the mitral annulus and the anterolateral diameter of the mitral annulus, measured during systole, using any method. |
| DCM | newCODE75 | | Mitral annulus height | The sum of the vertical distance from the highest point on the mitral annulus to the mitral annular plane and the vertical distance from the lowest point on the mitral annulus to the mitral annular plane. It is measured at systole, in a 3D transverse view of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 8*** *and this* [*link*](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4676476/#:~:text=This%20has%20led%20to%20the,fibres%20in%20systole%20(14).) |
| DCM | newCODE64 | | Mitral annulus nonplanarity angle | The angle between a vector from the furthest anterior aspect of the annulus to the midpoint of the commissural diameter and a vector from the furthest posterior aspect of the annulus to the midpoint of the commissural diameter. It is measured at systole, in a 3D view of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 8*** |
| DCM | newCODE76 | | Mitral annulus perimeter | The length of the perimeter of the annulus of the mitral valve measured during systole, in a short axis view at the level of the annulus of the mitral valve, using any method.  *Note to reviewers: See* ***PC Figure 8*** |
| DCM | newCODE59 | | Mitral valve coaptation length | The length of coaptation (where the anterior and posterior leaflets are in contact), measured during systole, in a 3D view, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE68 | | Mitral valve interpapillary distance | The distance between the two papillary muscle tips, measured during diastole in a four-chamber view, using any method.    *Note to reviewers:* ***PC Figure 19*** |
| DCM | newCODE108 | | Anterolateral papillary muscle to the left trigone | The distance between the anterolateral papillary muscle tip and a point in the left trigone region of the mitral annulus, measured during systole in a four-chamber view, using any method.  *Note to reviewers: See* ***PC Figure 19*** |
| DCM | newCODE70 | | Posteromedial papillary muscle to the right trigone | The distance between the posteromedial papillary muscle tip and a point in the right trigone region of the mitral annulus, measured during systole in a four-chamber view, using any method.  *Note to reviewers: See* ***PC Figure 19*** |
| DCM | newCODE78 | | Mitral valve prolapse area | The surface area of the portion of the mitral valve leaflets that is displaced above the annular plane (prolapsed) measured during systole, in a short axis view, using any method.  [Mitral Valve Prolapse | Concise Medical Knowledge](https://www.lecturio.com/concepts/mitral-valve-prolapse/)  *Note to reviewers:* ***PC Figure 16*** |
| DCM | newCODE79 | | Mitral valve prolapse volume | The volume encompassed by annular plane and the portion of the mitral valve leaflets that is displaced above the annular plane (prolapsed) measured during systole, in a short axis view, using any method. |
| DCM | newCODE80 | | Mitral valve segment flail gap | The distance between the tip of the free edge of a flail mitral valve leaflet or segment and the plane of the mitral annulus measured during systole, in any view, using any method.  [Mitral Clip Screening](http://saric.us/echonomy/Mitral_Clip_Screening.htm)  *Note to reviewers:* ***PC Figure 1*** |
| DCM | newCODE81 | | Mitral valve sphericity index | The ratio of the transverse diameter of the left ventricle at the level of the papillary muscle base divided by the longitudinal distance between the level of the papillary muscle base and the mitral annulus plane, measured at diastole in a four-chamber view, using any method.  https://doi.org/10.1016/j.jcmg.2008.12.025    *Note to reviewers:* ***PC Figure 13*** |
| DCM | newCODE82 | | Mitral valve tenting height | The perpendicular distance from the point of coaptation (where the anterior and posterior leaflets meet) to the annular plane measured during systole, in a 3D or 2D view at the level of the mitral annulus, using any method.    *Note to reviewers:* ***PC Figure 9*** |
| DCM | newCODE96 | | Mitral valve tenting area | The area between the ventricular surface of the leaflets and the annular plane measured during systole, in a 3D view at the level of the mitral annulus, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE83 | | Mitral valve tenting segment height A1-P1 | The distance from the point where the A1-P1 scallops of the mitral valve contact (coaptation point) to the annular plane measured during systole, in a four-chamber view at the level of the mitral annulus, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE84 | | Mitral valve tenting segment height A2-P2 | The distance from the point where the A2-P2 scallops of the mitral valve contact (coaptation point) to the annular plane measured during systole, in a four-chamber view at the level of the mitral annulus, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE85 | | Mitral valve tenting segment height A3-P3 | The distance from the point where the A3-P3 scallops of the mitral valve contact (coaptation point) to the annular plane measured during systole, in a four-chamber view at the level of the mitral annulus, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE86 | | Posterior mitral valve leaflet area | The area of the posterior mitral valve P1, P2 and P3 leaflet scallops measured during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE87 | | Posterior mitral valve leaflet length | The distance along the hinge line of the posterior mitral valve P1, P2 and P3 leaflet scallops measured during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE88 | | Posterior mitral valve P1 leaflet scallop length | The distance along the hinge line of the posterior mitral valve P1 leaflet scallop during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE89 | | Posterior mitral valve P2 leaflet scallop length | The distance along the hinge line of the posterior mitral valve P2 leaflet scallop during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE90 | | Posterior mitral valve P3 leaflet scallop length | The distance along the hinge line of the posterior mitral valve P3 leaflet scallop during systole, in the long axis view, using any method.  *Note to reviewers: See* ***PC Figure 14*** |
| DCM | newCODE94 | | Tricuspid annulus area | The area within the annulus of the tricuspid valve measured during diastole, in a 3D en face view of the tricuspid valve, using any method. |
| DCM | newCODE92 | | Tricuspid annulus area diastolic systolic ratio | The area within the annulus of the tricuspid valve calculated at diastole divided by the area within the annulus of the tricuspid valve calculated at systole, in a 3D en face view of the tricuspid valve, using any method. |
| DCM | newCODE93 | | Tricuspid annulus perimeter | The length of the perimeter of the annulus of the tricuspid valve measured during diastole, in a four-chamber view, using any method. |
| DCM | newCODE95 | | Tricuspid valve coaptation length | The length of coaptation (where the anterior, posterior, and septal leaflets are in contact), measured during systole, in a 3D view, using any method.  *Note to reviewers: See* ***PC Figure 9*** |
| DCM | newCODE97 | | Tricuspid valve major axis diastole | The maximum diameter of the annulus of the tricuspid valve measured during diastole, in a four-chamber view, using any method. |
| DCM | newCODE98 | | Tricuspid valve minor axis | The minimum diameter of the annulus of the tricuspid valve measured during diastole, in a four-chamber view, using any method. |
| DCM | newCODE99 | | Tricuspid valve sphericity index | The ratio of the maximum diameter of the annulus of the tricuspid valve and the minimum diameter of the annulus of the tricuspid valve, measured during diastole, in a four-chamber view, using any method. |
| DCM | newCODE100 | | Tricuspid valve tenting height | The distance from the point where the leaflets of the tricuspid valve contact (coaptation point) to the annular plane measured during systole, in a four-chamber 3D transverse view of the tricuspid valve, using any method. |
| DCM | newCODE101 | | Tricuspid valve tenting volume | The volume of the region between atrial surface of the leaflets and the annular plane measured during systole, in a 3D view of the tricuspid valve, using any method. |
| DCM | newCODE108 | | Left atrial appendage closure device circumference | The circumference of the left atrial appendage closure device after deployment, measured at the shoulder during end-systole in a 2D or 3D view of the left atrial appendage, using any method. |
| DCM | newCODE112 | | Left atrial appendage closure device compression ratio | The ratio of the diameter of the left atrial appendage closure device after deployment, measured at the shoulder during end-systole in a 2D or 3D view of the left atrial appendage, and diameter of the left atrial appendage closure device as specified by its manufacturer. |
| DCM | newCODE109 | | Left atrial appendage closure device diameter | The diameter of the left atrial appendage closure device after deployment, measured at the shoulder during end-systole in a 2D view of the left atrial appendage, using any method. |
| DCM | newCODE110 | | Left atrial appendage closure device size | The diameter of the left atrial appendage closure device as specified by its manufacturer. |
| DCM | newCODE115 | | Left atrial appendage depth | The maximum distance from the left atrial appendage orifice (the plane between the left upper pulmonary vein ridge and the left circumflex artery), to the most distal point of the left atrial appendage cavity, measured during end-diastole in a 2D view of the left atrial appendage, using any method. |
| DCM | newCODE114 | | Left atrial appendage landing zone | The maximum diameter of the left atrial appendage 1cm to 1.5cm inferior to the orifice (the plane between the left upper pulmonary vein ridge and the left circumflex artery), measured during end-systole, in a 2D view of the left atrial appendage, using any method.    *Note to reviewers:* ***PC Figure 18*** |
| DCM | newCODE120 | | Left atrial appendage major axis | The maximum diameter of the left atrial appendage orifice (the plane between the left upper pulmonary vein ridge and the left circumflex artery), measured during end-systole, in a 2D view of the left atrial appendage, using any method. |
| DCM | newCODE121 | | Left atrial appendage minor axis | The minimum diameter of the left atrial appendage orifice (the plane between the left upper pulmonary vein ridge and the left circumflex artery), measured during end-systole, in a 2D view of the left atrial appendage, using any method. |
| DCM | newCODE116 | | Left atrial appendage ostium perimeter | The perimeter of the left atrial appendage orifice (the plane between the left upper pulmonary vein ridge and the left circumflex artery), measured during end-systole, in a 3D en face view of the left atrial appendage, using any method. |

*Add the following UID Values to Part 6 Annex A Table A-3:*

**Table A-3 CONTEXT GROUP UID VALUES**

|  |  |  |
| --- | --- | --- |
| **Context UID** | **Context Identifier** | **Context Group Name** |
| ... | | |
| **1.2.840.newUID1** | **newCID1** | **Structural Heart Procedures** |
| **1.2.840.newUID2** | **newCID2** | **Structural Heart Devices** |
| **1.2.840.newUID3** | **newCID3** | **Structural Heart Measurement** |
| **1.2.840.newUID4** | **newCID4** | **Structural Heart Aortic Valve Measurement** |
| **1.2.840.newUID5** | **newCID5** | **Structural Heart Mitral Valve Measurement** |
| **1.2.840.newUID6** | **newCID6** | **Structural Heart Tricuspid Valve Measurement** |
| **1.2.840.newUID7** | **newCID7** | **Structural Heart Echo Measurements** |
| **1.2.840.newUID8** | **newCID8** | **Left Atrial Appendage Closure Measurement** |
| **1.2.840.newUID9** | **newCID9** | **Structural Heart Procedure Anatomic Site** |
| **1.2.840.newUID10** | **newCID10** | **Peripheral Access Anatomic Site** |
| **1.2.840.newUID11** | **newCID11** | **Indication for Structural Heart Procedure** |
| **1.2.840.newUID12** | **newCID12** | **Bradycardiac Agents** |
| **1.2.840.newUID13** | **newCID13** | **Transesophageal Echocardiography Scan Planes** |