Digital Imaging and Communications in Medicine (DICOM)

Supplement 97: CT/MR Cardiovascular Analysis Report

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Foreword

This supplement to the DICOM Standard defines templates for cardiovascular analysis reports of non-invasive computed tomography and magnetic resonance studies.

This document is a Supplement to the DICOM Standard. It is an extension to the following parts of the published DICOM Standard:

PS 3.16 - Content Mapping Resource

PS 3.17 - Explanatory Information

Scope and Field of Application

This supplement to the DICOM Standard defines how a non-invasive cardiovascular imaging examination report is encoded for storage and exchange. This is in the form of a DICOM Structured Report. It consists of the image references, graphs, numeric data and examiner's narrative text, supplemented with SNOMED® or other coded terms when available, and coordinates on images. This document specifies the CT/MR Cardiovascular Analysis Report templates, expected to be stored and exchanged via the Comprehensive SR SOP Class. Since this supplement proposes changes to existing parts of DICOM, the reader should have a working understanding of the Standard.

The CT/MR Cardiovascular Analysis Report templates are designed to support coded content, depending on the capabilities of the system producing this object. Cardiovascular reporting systems may populate optional content items as they see fit, to meet the requirements of the market; different cardiovascular reporting systems may produce different content (e.g., plain text alone, or supplemented with numeric or coded content items).

The specific rendering of the content of the report is not within the scope of the DICOM standard, except that it must be complete and unambiguous (see PS 3.4 Annex O).

The templates includes information on:

- Patient characteristics
- Relevant images
- Procedure summaries
- Automatically as well as manually detected findings
- Information about the progress of finding properties over time (by comparison with predecessor preceding reports)
- Conclusions

Part 17 Addendum

104 ***Add the following to PS 3.17:***

Annex X CT/MR Cardiovascular Analysis Report Templates (Informative)

X.1 CONTENT TREE STRUCTURE

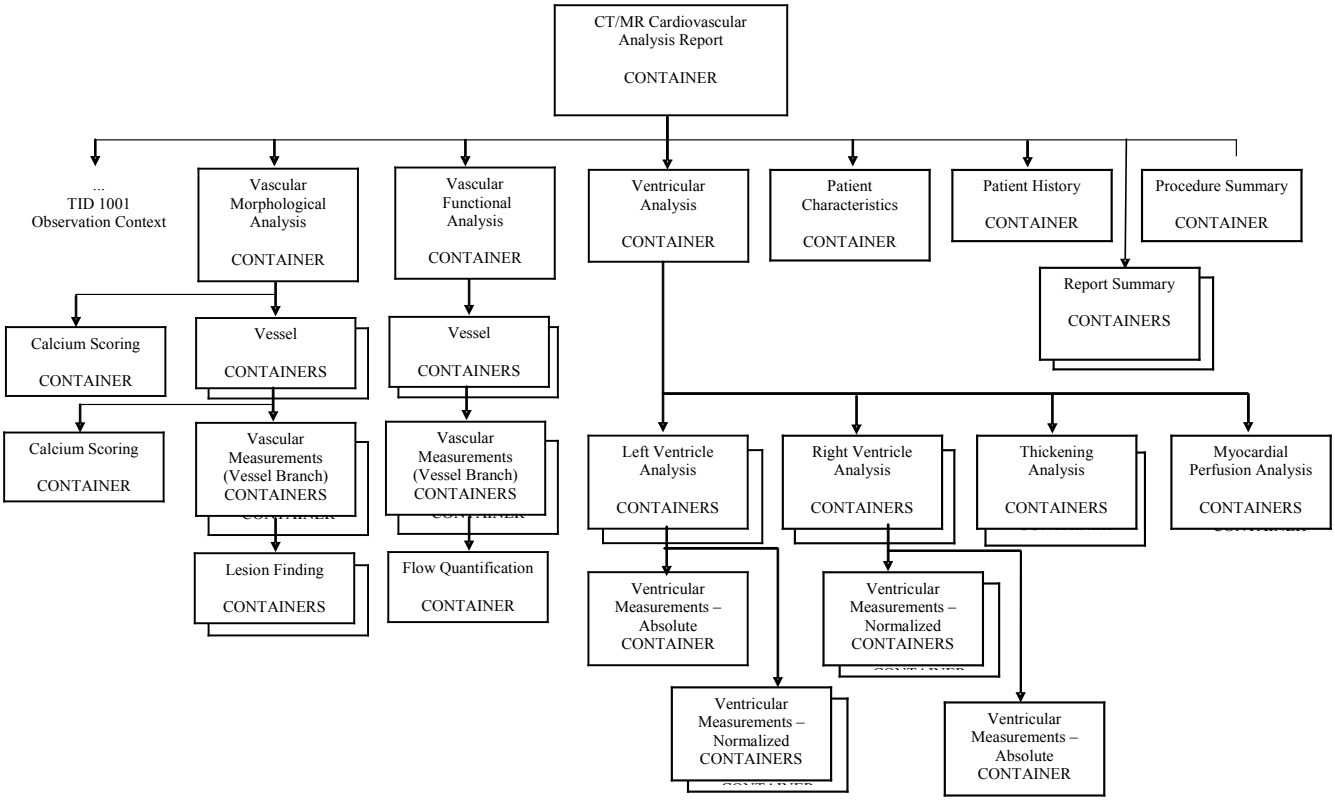

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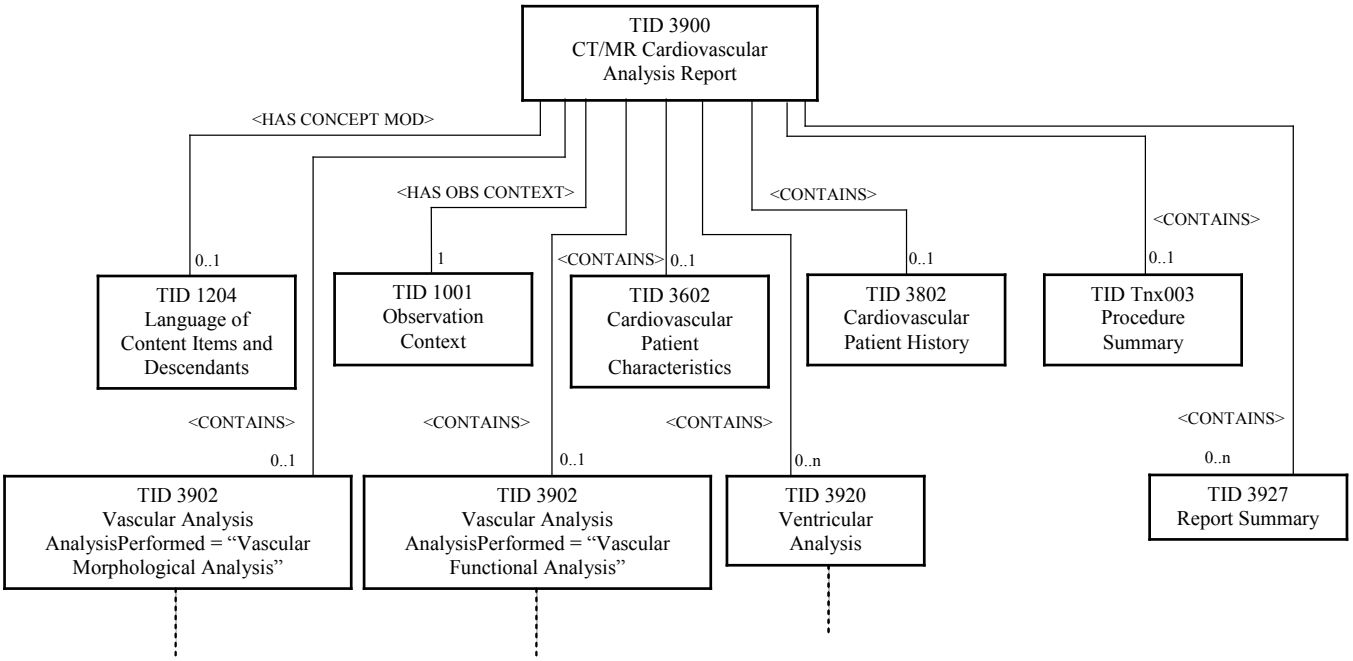
Figure X.1-1 Top Level Structure of Content Tree

X.2 TEMPLATE STRUCTURE



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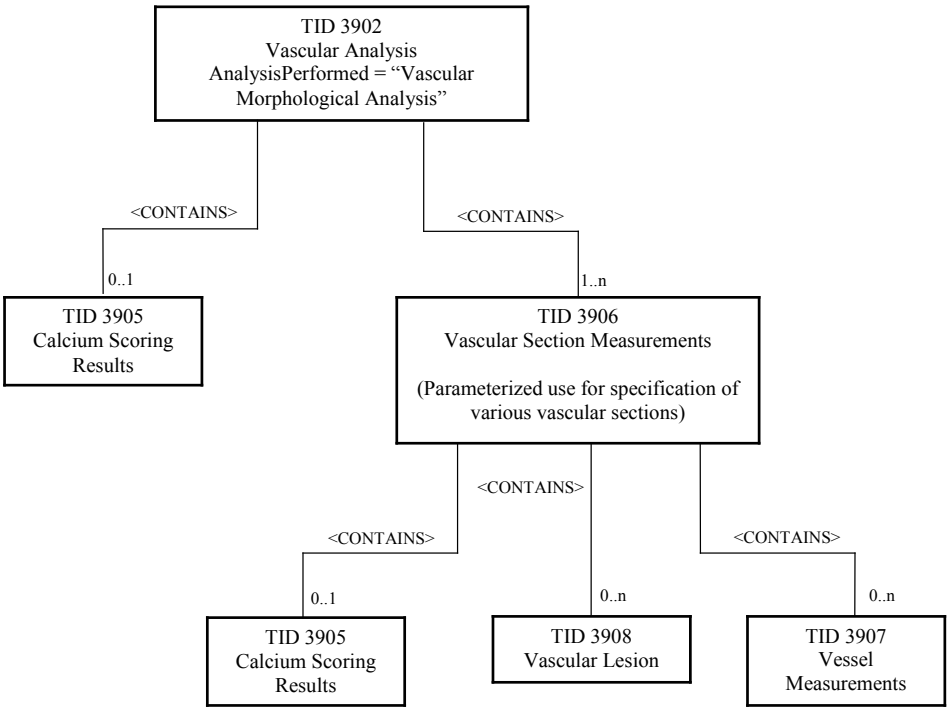

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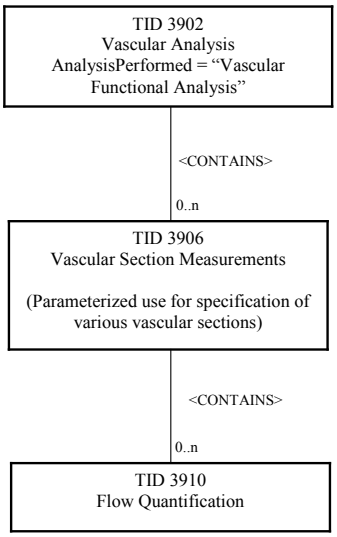
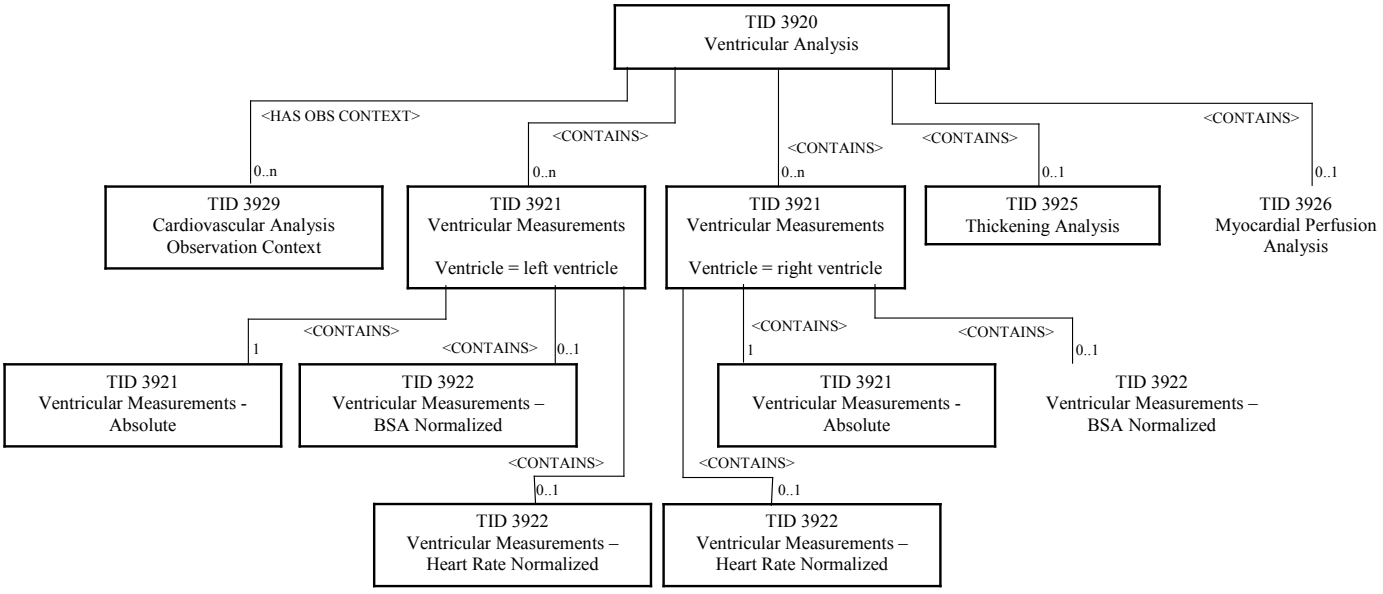
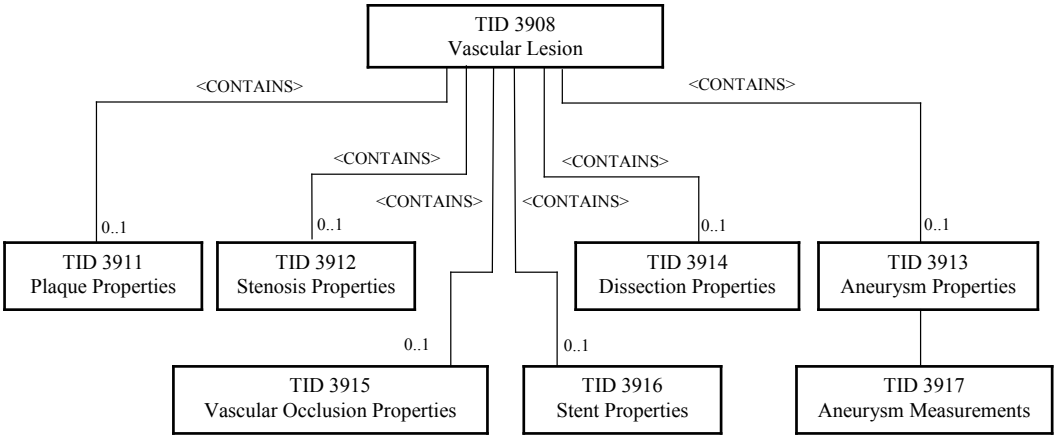

TID 3902
Vascular Analysis
AnalysisPerformed = "Vascular Functional Analysis"
<CONTAINS>
0..n
TID 3906
Vascular Section Measurements
(Parameterized use for specification of various vascular sections)
<CONTAINS>
0..n
TID 3910
Flow Quantification


TID 3920
Ventricular Analysis
<HAS OBS CONTEXT>
0..n
TID 3929
Cardiovascular Analysis
Observation Context
<CONTAINS>
0..n
TID 3921
Ventricular Measurements
Ventricle = left ventricle
<CONTAINS>
0..n
TID 3921
Ventricular Measurements
Ventricle = right ventricle
<CONTAINS>
0..1
TID 3925
Thickening Analysis
<CONTAINS>
0..1
TID 3926
Myocardial Perfusion Analysis
<CONTAINS>
1
TID 3921
Ventricular Measurements -
Absolute
<CONTAINS>
0..1
TID 3922
Ventricular Measurements –
BSA Normalized
<CONTAINS>
0..1
TID 3922
Ventricular Measurements –
Heart Rate Normalized
<CONTAINS>
1
TID 3921
Ventricular Measurements -
Absolute
<CONTAINS>
0..1
TID 3922
Ventricular Measurements –
BSA Normalized
<CONTAINS>
0..1
TID 3922
Ventricular Measurements –
Heart Rate Normalized



X.3 REPORT EXAMPLE

The following is a simple, non-comprehensive illustration of a report for a morphological examination with stenosis findings.

Cardiovascular Analysis Report – Vascular MRI

Observer: John Doe

Procedure Description

Abdominal aorta-iliac angiography procedure

Vascular Morphological Analysis

Anatomic Region = Abdominal Artery, Left

Left Gastric Artery

Findings:

Vessel Lumen Diameter: 2 mm
Vessel Lumen Cross Sectional Area: 3.4 mm^2
Lesion Finding #1
Best illustration of finding <*hyperlink to Image with ROI highlighted*>
Associated Morphology: Stenosis
Stenosis type: Vasculitis
Shape: Eccentric
Minimum Vessel Lumen Diameter: 1 mm
Maximum Vessel Lumen Diameter: 1.5 mm
Mean Vessel Lumen Diameter: 1.2 mm
Minimuml Vessel Lumen Cross-sectional Area: 1 mm2
Maximum Vessel Lumen Cross-sectional Area: 3 mm2
Stenotic Lesion Length: 5 mm
Minimum Lumen Area Stenosis: 45 %
Maximum Lumen Area Stenosis: 75 %
Mean Lumen Area Stenosis: 60%

Figure X.3-1 Presentation of Report Example #1

Table X.3-1 Example #1 Report Encoding

Nest	Code Meaning of Concept Name	Code Meaning or Example Value	TID
1	CT/MR Cardiovascular Analysis Report		3900
1.1	Procedure Reported	Vascular MRI	3900
1.2	Observer Name	John Doe	1001
1.3	Language of Content Items and Descendents	English	1204
1.4	Procedure Summary		3901
1.4.1	Current Procedure Description	Abdominal aorta-iliac angiography procedure	3901
1.5	Findings		3902
1.5.1	Analysis Performed	Vascular Morphological Analysis	3902
1.5.2	Artery of Abdomen		3906
1.5.2.1	Laterality	Left	3906
1.5.2.2	Findings		3906
1.5.2.3.1	Finding Site	Gastric Artery	3906
1.5.2.3.2	Vessel Lumen Diameter	2 mm	3907
1.5.2.3.3	Vessel Lumen Cross Sectional Area	3.4 mm2	3907
1.5.2.3.4	Lesion Finding		3908
1.5.2.3.4.1	Identifier	1	3908
1.5.2.3.4.2	Best Illustration of Findings (SCOORD)	*<ROI specification>*	3909
1.5.2.3.4.2.1		*<Image reference>*	3909
1.5.2.3.4.3	Associated Morphology	Stenosis	3908
1.5.2.3.4.4	Type	Vasculitis	3912
1.5.2.3.4.5	Shape	Eccentric	3912
1.5.2.3.4.6	Vessel Lumen Diameter	1 mm	3912
1.5.2.3.4.6.1	Qualifier Value	Minimum	3912
1.5.2.3.4.7	Vessel Lumen Diameter	1.5 mm	3912
1.5.2.3.4.7.1	Qualifier Value	Maximum	3912
1.5.2.3.4.8	Vessel Lumen Diameter	1.2 mm	3912
1.5.2.3.4.8.1	Qualifier Value	Mean	3912
1.5.2.3.4.9	Vessel Lumen Cross-sectional Area	1 mm2	3912
1.5.2.3.4.9.1	Qualifier Value	Minimum	3912
1.5.2.3.4.10	Vessel Lumen Cross-sectional Area	3 mm2	3912
1.5.2.3.4.10.1	Qualifier Value	Maximum	3912
1.5.2.3.3.11	Stenotic Lesion Length	5 mm	3912

Nest	Code Meaning of Concept Name	Code Meaning or Example Value	TID
1.5.2.3.4.12	Lumen Area Stenosis	45 %	3912
1.5.2.3.4.12.1	Qualifier Value	Minimum	3912
1.5.2.3.4.13	Lumen Area Stenosis	75 %	3912
1.5.2.3.4.13.1	Qualifier Value	Maximum	3912
1.5.2.3.4.14	Lumen Area Stenosis	60 %	3912
1.5.2.3.4.14.1	Qualifier	Mean	3912

Part 16 Addendum

156 ***Add the following Templates to Part 16 Annex A DCMR Templates (Normative):***

Annex A Structured Reporting Templates (Normative)

CT/MR CARDIOVASCULAR ANALYSIS REPORT TEMPLATES

TID 3900 CT/MR Cardiovascular Analysis Report

160 Root Template of the Non-invasive Computed Tomography and Magnetic Resonance Cardiovascular Analysis Report.

This template contains the top level structure and includes sub-templates for the various analyses.

164 **TID 3900**
CT/MR Cardiovascular Analysis Report
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (122600, DCM, “Cardiovascular Analysis Report”)	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(121058, DCM, "Procedure Reported")	1-n	M		DCID(3820) Non-invasive Vascular Procedures
3	>	HAS CONCEPT MOD	INCLUDE	DTID (1204) Language of Content Item and Descendants	1	M		
4	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	1	M		
5	>	CONTAINS	INCLUDE	DTID (3602) Cardiovascular Patient Characteristics	1	U		
6	>	CONTAINS	INCLUDE	DTID (3802) Patient History, Cardiovascular	1	U		
7	>	CONTAINS	INCLUDE	DTID (3901) Procedure Summary	1	U		
8	>	CONTAINS	INCLUDE	DTID (3902) Vascular Analysis	1	U		$AnalysisPerformed = EV(122605, DCM, "Vascular Morphological Analysis")
9	>	CONTAINS	INCLUDE	DTID (3902) Vascular Analysis	1	U		$AnalysisPerformed = EV(122606, DCM, "Vascular Functional Analysis")
10	>	CONTAINS	INCLUDE	DTID (3920) Ventricular Analysis	1	U		
11	>	CONTAINS	INCLUDE	DTID (3927) Report Summary	1-n	U		

168 **TID 3901 Procedure Summary**

Contains summaries related to the performed procedures.

TID 3901
Procedure Summary
172 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV(121064, DCM, "Current Procedure Descriptions")	1	M		
2	>	CONTAINS	TEXT	EV(121065, DCM, "Current Procedure Description")	1-n	M		

TID 3902 Vascular Analysis

176 Contains either morphological or functional vascular measurement results of an analysis

TID 3902
Vascular Analysis
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(111004, DCM, "Analysis Performed")	1	M		$AnalysisPerformed
3	>	CONTAINS	INCLUDE	DTID (3905) Calcium Scoring Results	1	UC	IFF the value of row 2 equals EV(122605, DCM, "Vascular Morphological Analysis")	
4	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels $AnalysisPerformed = $AnalysisPerformed
5	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels $AnalysisPerformed = $AnalysisPerformed
6	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-40501, SRT, ”Blood Vessel of Head” $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12106) Unpaired Intracranial Cerebral Vessels (unilateral) $AnalysisPerformed = $AnalysisPerformed

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
7	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-45005, SRT, "Artery of Neck") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12104) Extracranial Arteries $AnalysisPerformed = $AnalysisPerformed
8	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-45005, SRT, "Artery of Neck") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12104) Extracranial Arteries $AnalysisPerformed = $AnalysisPerformed
9	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-47040, SRT, "Artery of Lower Extremity ") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12109) Lower Extremity Arteries $AnalysisPerformed = $AnalysisPerformed
10	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-47040, SRT, "Artery of Lower Extremity ") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12109) Lower Extremity Arteries $AnalysisPerformed = $AnalysisPerformed
11	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-49403, SRT, "Vein of Lower Extremity") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12110) Lower Extremity Veins $AnalysisPerformed = $AnalysisPerformed
12	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-49403, SRT, "Vein of Lower Extremity") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12110) Lower Extremity Veins $AnalysisPerformed = $AnalysisPerformed
13	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-47020, SRT, "Artery of Upper Extremity") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12107) Upper Extremity Arteries $AnalysisPerformed = $AnalysisPerformed
14	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-47020, SRT, "Artery of Upper Extremity") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12107) Upper Extremity Arteries $AnalysisPerformed = $AnalysisPerformed

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
15	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-49103, SRT, "Vein of Upper Extremity") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12108) Upper Extremity Veins $AnalysisPerformed = $AnalysisPerformed
16	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-49103, SRT, "Vein of Upper Extremity") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12108) Upper Extremity Veins $AnalysisPerformed = $AnalysisPerformed
17	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-71019, SRT, "Vascular Structure of Kidney") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12115) Renal Vessels $AnalysisPerformed = $AnalysisPerformed
18	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-71019, SRT, "Vascular Structure of Kidney") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12115) Renal Vessels $AnalysisPerformed = $AnalysisPerformed
19	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-46002, SRT, "Artery of Abdomen") $SectionLaterality = EV(G-A101, SRT, "Left") $Anatomy = DCID (12111) Abdominal Arteries (lateral) $AnalysisPerformed = $AnalysisPerformed
20	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-46002, SRT, "Artery of Abdomen") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12111) Abdominal Arteries (lateral) $AnalysisPerformed = $AnalysisPerformed
21	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-46002, SRT, "Artery of Abdomen") $SectionLaterality = EV (G-A103, SRT, "Unilateral") $Anatomy = DCID (12112) Abdominal Arteries (unilateral) $AnalysisPerformed = $AnalysisPerformed
22	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-487A0, SRT, "Vein of Abdomen") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12113) Abdominal Veins (lateral) $AnalysisPerformed = $AnalysisPerformed

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
23	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-487A0, SRT, ”Vein of Abdomen”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12113) Abdominal Veins (lateral) $AnalysisPerformed = $AnalysisPerformed
24	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-487A0, SRT, ”Vein of Abdomen”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12114) Abdominal Veins (unilateral) $AnalysisPerformed = $AnalysisPerformed
25	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT (T-44000, SRT, ”Pulmonary Artery Structure”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (3829) Pulmonary Arteries $AnalysisPerformed = $AnalysisPerformed
26	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-43000, SRT, "Coronary Artery Structure") $Anatomy = DCID(3015) Coronary Arteries $AnalysisPerformed = $AnalysisPerformed
27	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-48400, SRT, "Cardiac Vein Structure") $Anatomy = DCID(3839) Coronary Veins $AnalysisPerformed = $AnalysisPerformed
28	>	CONTAINS	INCLUDE	DTID (3906) Vascular Section Measurements	1-n	U		$VascularSection = DT(T-48581, SRT, "Pulmonary Venous Structure") $Anatomy = DCID(3840) Pulmonary Veins $AnalysisPerformed = $AnalysisPerformed

TID 3905 Calcium Scoring Results

Contains the calcium scoring results related to plaque findings, vessels or the whole body.

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TID 3905
Calcium Scoring Results
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	CONTAINS	CODE	EV(111004, DCM, "Analysis Performed")	1	M		EV(122603, DCM, "Calcium Scoring Analysis")
3	>	CONTAINS	NUM	EV(122657, DCM, "Agatston Score Threshold")	1	U		Units= DT([hnsf´U], UCUM, "Hounsfield unit")
4	>	CONTAINS	NUM	EV(122658, DCM, "Calcium Mass Threshold")	1	U		Units= DT(mg/cm3, UCUM, "mg/cm^3")
5	>	CONTAINS	NUM	EV(122659, DCM, "Calcium Scoring Calibration")	1	U		Units= DT(mg/[hnsf´U]cm3), UCUM, "mg/[hnsf´U]cm^3")
6	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement=EV(112058, DCM, "Calcium Score") $Method=EV(112055, DCM, "Agatston Scoring Method") $Units= DT (1, UCUM, "no units")
7	>	CONTAINS	NUM	EV(122660, DCM, "Calcium Volume")	1	U		Units= UCUM(mm3, UCUM, "mm^3")
8	>	CONTAINS	NUM	EV(122661, DCM, "Calcium Mass")	1	U		Units= UCUM(mg, UCUM, "mg")
9	>	CONTAINS	NUM	EV(F-02A3B, SRT, "Number of Lesions")	1	U		Units= DT ({lesions}, UCUM, "lesions")

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TID 3906 Vascular Section Measurements

Sections of vascular measurements are section containers of an anatomical region consisting of measurement group containers containing the measurements.

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Parameter Name	Parameter Usage
$VascularSection	The concept name of the region or structure of which the anatomy is part
$SectionLaterality	The laterality (if any) of the anatomy in this section heading
$Anatomy	The concept name of the vascular anatomy
$AnalysisPerformed	The context of the measurements performed during the analysis

TID 3906
Vascular Section Measurements
196 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	$VascularSection	1	M		
2	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, “Laterality”)	1	MC	IFF $SectionLaterality has a value	$SectionLaterality
3	>	CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1-n	M		
4	>	HAS CONCEPT MOD	CODE	EV(G-C0E3, SRT, "Finding Site")	1	M		$Anatomy
5	>>	CONTAINS	CODE	EV(122686, DCM, “Parent Vessel Finding”)	1-n	U		DCID(3810) Vascular Morphology
6	>>>		INCLUDE	DTID (1350) Negation Modifier, Presence of Finding	1	U		
7	>>	CONTAINS	INCLUDE	DTID (3905) Calcium Scoring Results	1	UC	IF the value of $AnalysisPerformed equals (122605, DCM, "Vascular Morphological Analysis")	
8	>>	CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1-n	M		
9	>>>	HAS CONCEPT MOD	CODE	EV (125101, DCM, “Vessel Branch”)	1-n	UC	IF concept value of row 4 is not equal to (T-43000, SRT, "Coronary Artery Structure")	DCID (12117) Vessel Branch Modifiers
10	>>>	HAS CONCEPT MOD	CODE	EV (G-A1F8, SRT, “Topographical Modifier”)	1	UC	IF concept value of row 4 is not equal to (T-43000, SRT, "Coronary Artery Structure")	DCID (12116) Vessel Segment Modifiers
11	>>>	HAS CONCEPT MOD	CODE	EV (G-A1F8, SRT, “Topographical Modifier”)	1	UC	IF concept value of row 4 equals (T-43000, SRT, "Coronary Artery Structure")	DCID(3019) Cardiovascular Anatomic Location Modifiers
12	>>>	CONTAINS	INCLUDE	DTID (3907) Vessel Measurements	1	U		
13	>>>	CONTAINS	INCLUDE	DTID (3908) Vascular Lesion	1-n	UC	IF the value of $AnalysisPerformed equals (122605, DCM, "Vascular Morphological Analysis")	
14	>>>	CONTAINS	INCLUDE	DTID (3910) Flow Quantification	1	UC	IF the value of $AnalysisPerformed equals (122606, DCM, "Vascular Functional Analysis")	

Content Item Descriptions

Row 3	This Findings container allows an application to group related vessels or branches
Row 5	The characteristics associated with the parent vessel shall also be reported in the findings Container for the parent vessel. Negative findings (characteristics not present) need not be reported in the parent vessel Container.

200 **TID 3907 Vessel Measurements**

Contains measurements made on vessel level.

TID 3907
Vessel Measurements
204 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	NUM	EV(R-101BB, SRT, “Lumen Diameter Stenosis“)	1	U		UNITS=DT(%,UCUM, “%”)
2		CONTAINS	NUM	EV(R-101BA, SRT, “Lumen Area Stenosis“)	1	U		UNITS=DT(%,UCUM, “%”)
3		CONTAINS	NUM	EV(121206, DCM, ”Distance”)	1-n	U		UNITS=DT(mm, UCUM, “mm”)
4	>	HAS CONCEPT MOD	CODE	EV(122340, DCM, “Fiducial Feature”)	2	M		
5	>>	HAS CONCEPT MOD	CODE	EV(G-C171, SRT, “Laterality”)	1	U		DCID(244) Laterality
6	>		INCLUDE	DTID (320) Image or Spatial Coordinates	1	U		
7		CONTAINS	NUM	EV(G-0364, SRT, "Vessel Lumen Diameter")	1-n	U		UNITS=DT(mm, UCUM, "mm")
8	>	HAS CONCEPT MOD	CODE	EV (121401, DCM, “Derivation”)	1	U		DCID(3488) Min/Max/Mean
9	>	HAS CONCEPT MOD	NUM	EV(122337, DCM, "Relative Position”)	1	M		Units=EV(mm, UCUM, "mm")
10	>>	HAS CONCEPT MOD	CODE	EV(122340, DCM, "Fiducial Feature")	1	M		DCID(3837) Fiducial Feature

Content Item Descriptions

Rows 3-5	The distance between two identified fiducial features
Rows 7-10	Measurement of vessel diameter made at a position relative to a fiducial feature
Row 9	A positive value indicates a distance in the direction of flow within the vessel

208

TID 3908 Vascular Lesion

Specifies properties and the features of a vascular lesion deteced during the analysis. In addition it is possible to reference or include growing of lesions over time by adding references to previous reports or
212 by adding previous examination results.

TID 3908
Vascular Lesion
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV(F-00585, SRT, "Lesion Finding")	1	M		
2	>	CONTAINS	TEXT	EV (121151, DCM, "Lesion Identifier")	1	M		
3	>	CONTAINS	INCLUDE	DTID (3909) Best Illustration of Findings	1-n	U		
4	>	CONTAINS	TEXT	EV(121106, DCM, "Comment")	1-n	U		
5	>	CONTAINS	NUM	EV(122337, DCM, "Relative Position")	1	U		Units=EV(mm, UCUM, "mm")
6	>>	CONCEPT MOD	CODE	EV(122340, DCM, "Fiducial Feature")	1	M		DCID(3837) Fiducial Feature
7	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(G-0364, SRT, "Vessel Lumen Diameter") $Derivation=DCID (3838) Diameter Derivation $FindingSite=DCID(3486) IVUS Measurement Sites $Units=DT(mm, UCUM, "mm")
8	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(G-0366, SRT, "Vessel Lumen Cross-Sectional Area") $Derivation=DCID (3838) Diameter Derivation $FindingSite=DCID(3486) IVUS Measurement Sites $Units=DT(mm2, UCUM, "mm^2")
9	>	CONTAINS	CODE	EV(G-C504, SRT, "Associated Morphology")	1-n	M		DCID(3810) Vascular Morphology
10	>>		INCLUDE	DTID(3909) Best Illustration of Findings	1-n	U		
11	>>	HAS PROPERTIES	TEXT	EV(121106, DCM, "Comment")	1-n	U		
12	>>		INCLUDE	DTID(3911) Plaque Properties	1	MC	IFF value of row 9 equals (M-01470, SRT, "Plaque")	
13	>>		INCLUDE	DTID(3912) Stenosis Properties	1	MC	IFF value of row 9 equals (M-34200, "Stenosis")	
14	>>		INCLUDE	DTID(3913) Aneurysm Properties	1	MC	IFF value of row 9 equals (M-32200, SRT, "Aneurysm")	
15	>>		INCLUDE	DTID(3914) Dissection Properties	1	MC	IFF value of row 9 equals (D3-81310, SRT, "Arterial Dissection")	

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
16	>>	HAS PROPERTIES	CODE	EV(G-C504, SRT, "Associated Morphology")	1	MC	IFF value of row 9 equals (M-520F8, SRT, "Vascular Sclerosis")	DCID (3817) Vascular Sclerosis Types
17	>>		INCLUDE	DTID(3915) Vascular Occlusion Properties	1	MC	IFF value of row 9 equals EVM-34000, SRT, "Occlusion")	
18	>>		INCLUDE	DTID(3916) Stent Properties	1	MC	IFF value of row 9 equals (A-25500, SRT, "Stent")	

216

Content Item Descriptions

Row	Description
Row 5	A positive value indicates a distance in the direction of flow within the vessel For example: An aneurysm with relative position -4 mm from the renal arteries would begin superior to the renal arteries.
Row 7, 8	These rows are associated with the position of the most significant effect of the lesion, i.e. maximum diameter of aneurysm or the minimum diameter of stenosis

220 **TID 3909 Best Illustration of Findings**

Specification of images, waveforms, spatial and temporal coordinates used to illustrate findings.

TID 3909
Best Illustration of Findings
224 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	IMAGE	EV (121080, DCM, "Best illustration of finding")	1	U		
2		CONTAINS	WAVEFORM	EV (121080, DCM, "Best illustration of finding")	1	U		
3		CONTAINS	SCOORD	EV (121080, DCM, "Best illustration of finding")	1	U		
4	>	SELECTED FROM	IMAGE	no purpose of reference	1	M		
5		CONTAINS	TCOORD	EV (121080, DCM, "Best illustration of finding")	1	U		
6	>	SELECTED FROM	SCOORD	no purpose of reference	1	MC	XOR row 8, 9	
7	>>	SELECTED FROM	IMAGE	no purpose of reference	1	MC		must be a multiframe image
8	>	SELECTED FROM	WAVEFORM	no purpose of reference	1	MC	XOR row 6, 9	
9	>	SELECTED FROM	IMAGE	no purpose of reference	1	MC	XOR row 6, 8	must be a multiframe image

TID 3910 Flow Quantification

228 Contains the flow quantification measurement results

TID 3910
Flow Quantification
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(111004, DCM, "Analysis Performed")	1	M		EV (122604, DCM, "Flow Quantification")
3	>	HAS OBS CONTEXT	INCLUDE	DTID(3929) Cardiovascular Analysis Observation Context	1	U		
4	>	HAS OBS CONTEXT	DATETIME	EV(G-D321, SRT, "Start Time")	1	M		
5	>	HAS OBS CONTEXT	DATETIME	EV(G-D320, SRT, "Stop Time")	1	M		
6	>	CONTAINS	INCLUDE	DTID(3990) 2-Dimensional Measurement Graph	1	U		$MeasurementGraph = EV(122667, DCM, "Blood velocity vs. time of cardiac cycle") $X-Concept = EV(122666, DCM, "Time relative to R-wave peak") $Y-Concept = EV(F-0319E, SRT, "Arterial Velocity") $X-AxisUnits= DT(ms, UCUM, "ms") $Y-AxisUnits= DT(cm/s, UCUM, "cm/s")
7	>	CONTAINS	NUM	EV(122642, DCM, "Velocity Encoding Minimum Value")	1	U		Units = DT(cm/s, UCUM, "cm/s")
8	>	CONTAINS	NUM	EV(122643, DCM, "Velocity Encoding Maximum Value")	1	U		Units = DT(cm/s, UCUM, "cm/s")
9	>	CONTAINS	CONTAINER	EV(125007, DCM, "Measurement Group")	1-n	M		
10	>>	HAS CONCEPT MOD	TEXT	EV(G-C0E3, SRT, "Finding Site")	1	MC	XOR row 11	
11	>>	HAS CONCEPT MOD	CODE	EV(G-C0E3, SRT, "Finding Site")	1	MC	XOR row 10	
12	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122207, DCM, "Blood Velocity, Peak") $Units = DT(cm/s, UCUM, "cm/s")
13	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122205, DCM, "Blood Velocity, Mean") $Units = DT(cm/s, UCUM, "cm/s")
14	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(F-39200, SRT, "Blood Flow") $Derivation = EV(R-00317, SRT, "Mean") $Units = DT(ml/s, UCUM, "ml/s"")

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
15	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1-2	U		$Measurement = EV(F-39200, SRT, "Blood Flow") $ModType = EV(G-C048, SRT, “Direction of flow”) $ModValue = DCID(12221) Flow Direction $Units = DT(ml/s, UCUM, "ml/s")
16	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122645, DCM, "Net Forward Volume") $Units = DT(ml, UCUM, "ml")
17	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122645, DCM, "Net Forward Volume") $ModType=EV(121425, DCM, "Index") $ModValue= DT(8277-6, LN, “BSA”) $Units = (ml/m2, UCUM, "ml/m^2")
18	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = EV(G-0366, SRT, "Vessel Lumen Cross-Sectional Area") $Derivation = DCID (3488) Min/Max/Mean $Units = DT(mm2, UCUM, "mm^2")
19	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(F-32110, SRT, "Cardiac Index") $Units = DT(l/min/m2, UCUM, "l/min/m^2")

232

TID 3911 Plaque Properties

Properties of a plaque finding

236

TID 3911
Plaque Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	NUM	EV(122376, DCM, "Total Plaque Volume")	1	U		Units=DT(mm3,UCUM,"mm^3")
2		HAS PROPERTIES	CODE	EV(G-A428, SRT, "Margin")	1	U		DCID(3715) Lesion Morphology
3		HAS PROPERTIES	CODE	EV(M-01000, SRT, "Morphological Abnormal Structure")	1-n	M		DCID(3802) Plaque Structures
4		HAS PROPERTIES	INCLUDE	DTID (3905) Calcium Scoring Results	1	U		
5		HAS PROPERTIES	CODE	EV(121071, DCM, "Finding")	1	U		DT(R-102DA, SRT, "Contrast Media Seen in Plaque")

240

TID 3912 Stenosis Properties

Properties of a stenosis finding

244

TID 3912
Stenosis Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	CODE	EV(G-C036, SRT, "Measurement method")	1	M		DCID(3804) Stenosis Measurement Methods
2		HAS PROPERTIES	CODE	EV(G-D775, SRT, "Type of Stenosis")	1	U		DCID(3805) Stenosis Types
3		HAS PROPERTIES	CODE	EV(G-C002, SRT, "Associated with")	1	U		DCID(3815) Source of Vascular Finding
4		HAS PROPERTIES	CODE	EV(G-C2FE, SRT, "Shape")	1	U		DCID(3806) Stenosis Shapes
5		HAS PROPERTIES	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(G-0364, SRT, "Vessel Lumen Diameter") $Derivation= DCID(3488) Min/Max/Mean $Units=DT(mm, UCUM, "mm")
6		HAS PROPERTIES	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(G-0366, SRT, "Vessel Lumen Cross-Sectional Area") $Derivation= DCID(3488) Min/Max/Mean $Units=DT(mm2,UCUM, "mm^2")
7		HAS PROPERTIES	NUM	EV(R-101BC, SRT, "Stenotic Lesion Length")	1	U		Units=DT(mm, UCUM, "mm")
8		HAS PROPERTIES	CODE	EV(R-101BC, SRT, "Stenotic Lesion Length")	1	U		DCID(3831) Stenosis Length
9		HAS PROPERTIES	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(R-101BA, SRT, "Lumen Area Stenosis") $Derivation= DCID(3488) Min/Max/Mean $Units=DT(%,UCUM, “%")
10		HAS PROPERTIES	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement= EV(R-101BB, SRT, "Lumen Diameter stenosis") $Derivation= DCID(3488) Min/Max/Mean $Units=DT(%,UCUM, “%")
11		HAS PROPERTIES	CODE	EV(R-101BA, SRT, "Lumen Area Stenosis")	1-n	U		DCID(3832) Stenosis Grade
12	>	HAS CONCEPT MOD	CODE	EV(121401, DCM, "Derivation")	1	M		DCID(3488) Min/Max/Mean

248

TID 3913 Aneurysm Properties

Properties of an aneurysm finding

TID 3913
Aneurysm Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	CODE	EV(G-C504, SRT, "Associated Morphology")	1-n	M		DCID (3808) Aneurysm Types
2		HAS PROPERTIES	CODE	EV(G-C002, SRT, "Associated with")	1	U		DCID(3815) Source of Vascular Finding
3		HAS PROPERTIES	INCLUDE	DTID(3917) Aneurysm Measurements	1	U		
4		HAS PROPERTIES	CODE	EV(G-C504, SRT, "Associated Morphology")	1-n	UC	IFF value of row 1 equals (M-32206, SRT, "Compound Aneurysm")	DCID (3808) Aneurysm Types
5	>	HAS PROPERTIES	INCLUDE	DTID(3917) Aneurysm Measurements	1	U		

TID 3914 Arterial Dissection Properties

Properties of a arterial dissection finding

TID 3914
Arterial Dissection Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	CODE	EV(122387, DCM, "Dissection Classification")	1	M		DCID(3492) IVUS Dissection Classification
2		HAS PROPERTIES	CODE	EV(G-C150, SRT, "Etiology")	1	U		DCID(3809) Associated Conditions
3		HAS PROPERTIES	NUM	EV(G-A22A, SRT, "Length")	1	U		Units= DT(mm, UCUM, "mm")
4		HAS PROPERTIES	CODE	EV(R-102DD, SRT, "Anatomic structure potentially involved in evolution of disease")	1-n	U		DCID(3827) Vessel Segments

TID 3915 Vascular Occlusion Properties

Properties of vascular occlusion finding

TID 3915
Vascular Occlusion Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	CODE	EV(G-D775, SRT, "Type of Stenosis")	1	M		DCID(3805) Stenosis Types

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
2		HAS PROPERTIES	CODE	EV(G-C002, SRT, "Associated with")	1	U		DCID(3815) Source of Vascular Finding
3		HAS PROPERTIES	CODE	EV(G-C2FE, SRT, "Shape")	1	U		DCID(3806) Stenosis Shapes
4		HAS PROPERTIES	INCLUDE	DTID(300) Measurement	1	U		$Measurement=EV(R-101BC, SRT, "Stenotic Lesion Length") $Method= DCID(3804) Stenosis Measurement Methods $Units=DT(mm, UCUM, "mm")

268

TID 3916 Stent Properties

Properties of a stent finding

272 **TID 3916**
Stent Properties
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS PROPERTIES	CODE	EV(155, DCM, "Stent Composition")	1-n	M		DCID(38014) Stent Composition
2		HAS PROPERTIES	NUM	EV(R-101AD, SRT, "Vascular Stent Diameter")	1	U		Units= DT(mm, UCUM, "mm")
3		HAS PROPERTIES	NUM	EV(R-101B0, SRT, "Vascular Stent Length")	1	U		Units= DT(mm, UCUM, "mm")
4		HAS PROPERTIES	CODE	EV(121071, DCM, "Finding")	1-n	U		DCID(3813) Stent Findings
5	>		INCLUDE	DTID(3912) Stenosis Properties	1	MC	IFF value of row 4 equals (M-34200, SRT, "Stenosis")	

TID 3917 Aneurysm Measurements

276 Measurements of aneurysms. TID 300 invoked from this template alllows the measurement to reference an image used as the source of the measurement.

TID 3917
Aneurysm Measurements
280 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(G-A22A, SRT, "Length") $ModType = EV(G-C093, SRT, ”Extent”) $ModValue = DT(G-A143, SRT, ”Longitudinal”) $Units=DT(mm, UCUM, "mm")

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
2			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(G-D705, SRT, "Volume") $Method= DCID(3807) Volume Measurement Methods $Units=DT(mm3, UCUM, "mm^3")
3			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(R-102DB, SRT, "Vessel Lumen Cross-Sectional Area Increase") $Units=DT(%, UCUM, “%")
4			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(R-102DB, SRT, "Vessel Lumen Cross-Sectional Area Increase") $Units=DT(mm2, UCUM, "mm^2")
5			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(R-102DC, SRT, "Vessel Lumen Cross-Sectional Diameter Increase") $Units=DT(%, UCUM, “%")
6			INCLUDE	DTID(300) Measurement	1	U		$Measurement= EV(R-102DC, SRT, "Vessel Lumen Cross-Sectional Diameter Increase") $Units=DT(mm, UCUM, "mm")

TID 3920 Ventricular Analysis

Contains the ventricular functional measurement results.

284

TID 3920
Ventricular Analysis
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(111004, DCM, "Analysis Performed")	1	M		EV(122601, DCM, "Ventricular Analysis")
3	>	HAS OBS CONTEXT	INCLUDE	DTID (3929) Cardiovascular Analysis Observation Context	1	U		
4	>	CONTAINS	INCLUDE	DTID (3921) Ventricular Measurements	1-n	U		$Ventricle = EV (T-32600, SRT, "Left Ventricle”)
5	>	CONTAINS	INCLUDE	DTID (3921) Ventricular Measurements	1-n	U		$Ventricle = EV (T-32500, SRT, "Right Ventricle”)
6	>	CONTAINS	INCLUDE	DTID (3925) Thickening Analysis	1-n	U		
7	>	CONTAINS	INCLUDE	DTID (3926) Myocardial Perfusion Analysis	1-n	U		

288

TID 3921 Ventricular Measurements

Ventricular measurement results related to the volume of a ventricle.

Parameter Name	Parameter Usage
$Ventricle	Describes if either the left or the right ventricle was examined

292

TID 3921
Ventricular Measurements
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(G-C0E3, SRT, "Finding Site")	1	M		$Ventricle
3	>	CONTAINS	INCLUDE	DTID(3922) Absolute Values Of Ventricular Measurements	1	M		
4	>	CONTAINS	INCLUDE	DTID(3923) BSA-Normalized Ventricular Measurements	1	U		
5	>	CONTAINS	INCLUDE	DTID(3924) Heart Rate-Normalized Ventricular Measurements	1	U		

296

TID 3922 Absolute Values Of Ventricular Measurements

Ventricular measurement results related to the absolute volume of a ventricle.

300

TID 3922
Absolute Values Of Ventricular Measurements
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV(122608, DCM, "Absolute Values Of Ventricular Measurements")	1	M		
2	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = DCID(3833) Cardiac Ejection Fraction $ModType = DT(122670, DCM, "Papillary Muscle Included/Excluded") $ModValue = DCID(3821) Papillary Muscle Included/Excluded $Method = DCID(3807) Volume Measurement Methods $Units = DT(%,UCUM,"%")

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
3	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = DCID(3835) Volume Measurements $ModType = DT(122670, DCM, "Papillary Muscle Included/Excluded") $ModValue = DCID(3821) Papillary Muscle Included/Excluded $Units = DT(ml, UCUM, "ml")
4	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(F-32100, SRT, "Cardiac Output") $ModType = DT(122670, DCM, "Papillary Muscle Included/Excluded") $ModValue = DCID(3821) Papillary Muscle Included/Excluded $Units = DT(l/min, UCUM, "l/min")
5	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = EV(122447, DCM, " Wall Mass") $ModType = DT(122670, DCM, "Papillary Muscle Included/Excluded") $ModValue = DCID(3821) Papillary Muscle Included/Excluded $Units = DT(g, UCUM, "g")
6	>>	HAS CONCEPT MOD	CODE	EV(R-4089A, SRT, "Cardiac Cycle Point")	1	U		DCID(12233) Cardiac Cycle Point
7	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122616, DCM, "Peak Ejection Rate") $Units = DT(ml/s, UCUM, "ml/s")
8	>	CONTAINS	NUM	EV(122617, DCM, "Peak Ejection Time")	1	U		Units = EV(s, UCUM, "s")
9	>>	HAS CONCEPT MOD	CODE	EV(122611, DCM, “Reference Point”)	1	M		EV(F-32011, SRT, "End-Diastolic")
10	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122618, DCM, "Peak Filling Rate") $Units = DT(ml/s, UCUM, "ml/s")
11	>	CONTAINS	NUM	EV(122619, DCM, "Peak Filling Time")	1	U		$Units = DT(s, UCUM, ”s”)
12	>>	HAS CONCEPT MOD	CODE	EV(122611, DCM, “Reference Point”)	1	M		DT(109070, DCM, "End-Systolic")

304

TID 3923 BSA-Normalized Ventricular Measurements

Ventricular measurement results normalized based on the Body Surface Area

308

TID 3923
BSA-normalized Ventricular Measurements
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV(122609, DCM, "Normalized values of ventricular measurements")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(121425, DCM, "Index")	1	M		DT(8277-6, LN, “Body Surface Area”)
3	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	UC		$Measurement = DCID(3835) Volume Measurements $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8277-6, LN, “Body Surface Area”) $Units=DT(ml/m2, UCUM, “ml/m^2")
4	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(F-32110, SRT, "Cardiac Index") $Units=DT(ml/min/m2, UCUM, “(ml/min)/m^2”)
5	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-2	UC		$Measurement = EV(122447, DCM, "Wall Mass") $ModType = EV (121425, DCM, “Index") $ModValue = DT(8277-6, LN, “Body Surface Area”) $Units=DT(g/m2, UCUM, “g/m^2”)
6	>>	HAS CONCEPT MOD	CODE	DT(122670, DCM, "Papillary Muscle Included/Excluded”	1	U		DCID(3821) Papillary Muscle Included/Excluded
7	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(122618, DCM, "Peak Filling Rate") $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8277-6, LN, “Body Surface Area”) $Units=DT(ml/s/m2, UCUM, “(ml/s)/m^2”)
8	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(F-32070, SRT, "Peak Cardiac Ejection Fraction") $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8277-6, LN, “Body Surface Area”) $Units=DT(%/m2, UCUM, “%/m^2”)

312 **TID 3924 Heart Rate-Normalized Ventricular Measurements**

Ventricular measurement results normalized based on the Heart Rate

TID 3924
Heart Rate-Normalized Ventricular Measurements
316 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV(122609, DCM, "Normalized values of ventricular measurements")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(121425, DCM, "Index"	1	M		DT(8867-4, LN, “Heart Rate")
3	>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	UC		$Measurement = DCID(3835) Volume Measurements $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8867-4, LN, “Heart Rate") $Units=DT(ml/{H.B.}/min, UCUM, "ml/BPM”)
4	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(F-32100, SRT, "Cardiac Output") $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8867-4, LN, “Heart Rate") $Units = DT(ml/min/{H.B.}/min, UCUM, ”(ml/min)/ BPM”)
5	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(122618, DCM, "Peak Filling Rate") $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8867-4, LN, “Heart Rate") $Units = DT(ml/s/{H.B.}/min, UCUM, “(ml/s)/BPM”)
6	>	CONTAINS	INCLUDE	DTID(300) Measurement	1	UC		$Measurement = EV(F-32070, SRT, "Peak Cardiac Ejection Fraction") $ModType = EV (121425, DCM, “Index”) $ModValue = DT(8867-4, LN, “Heart Rate") $Units=DT(%/{H.B.}/min, UCUM, “%/BPM”)

TID 3925 Ventricular Thickening Analysis

320 Data of a ventricular wall thickening analysis

TID 3925
Thickening Analysis
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(111004, DCM, "Analysis Performed")	1	M		EV (122607, DCM, "Thickening Analysis")
3	>	CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1-n	M		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
4	>>	CONTAINS	CODE	EV(G-C0E3, SRT, "Finding Site")	1-n	MC	XOR row 5	DCID(3717) Myocardial Wall Segments
5	>>	CONTAINS	TEXT	EV(G-C0E3, SRT, "Finding Site")	1	MC	XOR row 4	
6	>>	CONTAINS	INCLUDE	DTID(3909) Best Illustration of Findings	1-n	U		
7	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	M		$Measurement = EV(122445, DCM, "Wall Thickness") $ModType= EV(R-4089A, SRT, "Cardiac Cycle Point") $ModValue= DT(F-32011, SRT, "End-Diastolic") $Units = DT(mm, UCUM, "mm")
8	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	M		$Measurement = EV(122445, DCM, "Wall Thickness") $ModType= EV(R-4089A, SRT, "Cardiac Cycle Point") $ModValue= DT(109070, DCM, "End-Systolic") $Units = DT(mm, UCUM, "mm")
9	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1	U		$Measurement = EV(122624, DCM, "Wall Thickness Ratio end-systolic to end-diastolic") $Units = DT(%, UCUM, "%")
10	>>	CONTAINS	CODE	EV(F-32050, SRT, "Cardiac Wall Motion")	1	U		DCID (3703) Wall Motion
11	>>	CONTAINS	CODE	EV(G-C504, SRT, "Associated Morphology")	1	U		DCID (3704) Wall Morphology Findings

324

TID 3926 Myocardial Perfusion Analysis

Myocardial perfusion analysis results.

328 Perfusion measurements may be performed either for one or more ventricular segments (row 4) or for substructures inside ventricular segments (row 14)

TID 3926
Myocardial Perfusion Analysis
332 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV(111004, DCM, "Analysis Performed")	1	M		EV(122602, DCM, "Myocardial Perfusion Analysis")
3	>	CONTAINS	CONTAINER	EV (121070, DCM, "Findings")	1-n	M		
4	>>	HAS CONCEPT MOD	CODE	EV(G-C0E3, SRT, "Finding Site")	1-n	MC	XOR row 6	DCID(3717) Myocardial Wall Segments

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
5	>>>	HAS CONCEPT MOD	CODE	EV(G-A1F8, SRT, “Topographical Modifier”	1	U		DCID(3843) Myocardial Subsegment
6	>>	HAS CONCEPT MOD	TEXT	EV(G-C0E3, SRT, "Finding Site")	1	MC	XOR row 4	
7	>>	HAS ACQ CONTEXT	CODE	EV(109054, DCM, “Patient State”)	1	U		DCID(3101) NM Procedural State Values
8	>>	HAS ACQ CONTEXT	INCLUDE	DTID (3106) Drugs/Contrast Administered	1-n	U		
9	>>	CONTAINS	TEXT	EV(122627, DCM, "Curve Fit Method")	1	U		
10	>>	CONTAINS	INCLUDE	DTID(3909) Best Illustration of Findings	1-n	U		
11	>>	CONTAINS	TEXT	EV(122628, DCM, "Baseline Result Correction")	1	U		
12	>>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = DCID(3836) Time-based Perfusion Measurements $Units= EV(s, UCUM, "s")
13	>>	CONTAINS	NUM	EV(122640, DCM, "Image Interval")	1	U		Units= EV(ms, UCUM, "ms")
14	>>	CONTAINS	NUM	EV(122635, DCM, “MR Perfusion Peak”)	1	U		Units=DT(1, UCUM, “No units”)
15	>>	CONTAINS	NUM	EV(122636, DCM, "MR Perfusion Slope")	1	U		Units=DT(1, UCUM, “No units”)
16	>>	CONTAINS	NUM	EV(122637, DCM, "MR Perfusion Time Integral")	1	U		Units=DT(1, UCUM, “No units”)
17	>>	CONTAINS	CONTAINER	EV(125007, DCM, "Measurement Group")	1-n	U		
18	>>>	CONTAINS	INCLUDE	DTID(300) Measurement	1-n	U		$Measurement = DCID(3836) Time-based Perfusion Measurements $Units= EV(s, UCUM, "s")
19	>>>	CONTAINS	NUM	EV(122635, DCM, “MR Perfusion Peak”)	1	U		Units=DT(1, UCUM, “No units”)
20	>>>	CONTAINS	NUM	EV(122636, DCM, "MR Perfusion Slope")	1	U		Units=DT(1, UCUM, “No units”)
21	>>>	CONTAINS	NUM	EV(122637, DCM, "MR Perfusion Time Integral")	1	U		Units=DT(1, UCUM, “No units”)
22	>>	CONTAINS	CODE	EV(122664, DCM, "Late Contrast Enhancement")	1	U		DCID(230) Yes-No
23	>>>	HAS ACQ CONTEXT	NUM	EV(122665, DCM, "Time after start of injection of contrast bolus")	1	M		Units=DT(s, UCUM, "s")
24	>>>	HAS ACQ CONTEXT	NUM	EV(122668, DCM, "Time interval since detection of contrast bolus")	1	U		Units=DT(s, UCUM, "s")

Content Item Descriptions

Row 12	Image Interval is appropriate only for equally time-spaced images

336

TID 3927 Report Summary

Contains summary elements based on the findings of the report

TID 3927
340 **Report Summary**
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	BCID(7001) Diagnostic Imaging Reports Headings	1	M		
2	>	CONTAINS	CODE	BCID(7002) Diagnostic Imaging Report Elements	1-n	U		
3	>>		INCLUDE	DTID(320) Image or Spatial Coordinates	1-n	U		
4	>>		INCLUDE	DTID(321) Waveform or Temporal Coordinates	1-n	U		
5	>	CONTAINS	TEXT	BCID(7002) Diagnostic Imaging Report Elements	1-n	U		
6	>>		INCLUDE	DTID(320) Image or Spatial Coordinates	1-n	U		
7	>>		INCLUDE	DTID(321) Waveform or Temporal Coordinates	1-n	U		

344 **TID 3929 Cardiovascular Analysis Observation Context**

Defines the observation context for cardioVascular Functional Analysis

TID 3929
Cardiovascular Analysis Observation Context
348 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		HAS OBS CONTEXT	NUM	EV(8867-4, LN, "Heart Rate")	1	U		Units= DT ("{H.B.}/min", UCUM, "BPM")
2		HAS OBS CONTEXT	CODE	EV(8884-9, LN, "Cardiac Rhythm")	1	U		DCID(3826) Heart Rhythm
3		HAS OBS CONTEXT	NUM	EV(F-008EC, SRT, "Systolic Blood Pressure")	1	U		Units=DT(mm[Hg], UCUM, “mmHg”)
4		HAS OBS CONTEXT	NUM	EV(F-008ED, SRT, "Diastolic Blood Pressure")	1	U		Units=DT(mm[Hg], UCUM, “mmHg”)
5		HAS OBS CONTEXT	CODE	EV (F-043E6, SRT, "Respiration Observable")	1	U		DCID(3823) Respiratory Status
6		HAS ACQ CONTEXT	INCLUDE	DTID (3106) Drugs/Contrast Administered	1-n	U		

TID 3990 2-Dimensional Measurement Graph

352 Generic template representing arbitrary two-dimensional graphs.

Parameter Name	Parameter Usage
$MeasurementGraph	Describes what the graph is about
$X-Concept	Concept of the X-Axis of the graph
$Y-Concept	Concept of the Y-Axis of the graph
$X-AxisUnit	Unit of the x-axis data elements
$Y-AxisUnit	Unit of the y-axis data elements

TID 3990
2-Dimensional Measurement Graph
356 **Type: Extensible**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	$MeasurementGraph	1	M		
2	>	CONTAINS	CODE	EV(122698, DCM, "X-Concept")	1	M		$X-Concept
3	>	CONTAINS	CODE	EV(122699, DCM, "Y-Concept")	1	M		$Y-Concept
4	>	CONTAINS	CONTAINER	no concept name	0-n	M		
5	>>	CONTAINS	NUM	$X-Concept	1	M		UNITS= $X-AxisUnit
6	>>	CONTAINS	NUM	$Y-Concept	1	M		UNITS= $Y-AxisUnit
7	>	CONTAINS	IMAGE	$MeasurementGraph	1	U		
8	>	CONTAINS	WAVEFORM	$MeasurementGraph	1	U		
9	>	CONTAINS	COMPOSITE	$MeasurementGraph	1	U		

Content Item Descriptions

Rows 5-6	The X-Concept values shall be monotonically increasing.
Row 7	Secondary Capture Image containing a bitmap representation of the graph
Row 8	Waveform containing a representation of the graph
Row 9	Composite Object containing a rendered representation of the graph

360

Modify the following Template in Part 16 Annex A DCMR Templates (Normative):

TID 3802 Cardiovascular Patient History

364 This template contains information about a cardiovascular patient's past medical history. This information is considered to have some degree of "persistence" across different episodes.

TID 3802
Cardiovascular Patient History
Type: Extensible

	NL	Relation with Parent	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint
…								
13	>	CONTAINS	CONTAINER	DT (10160-2, LN, "History of Medications")	1	U		
14	>>	CONTAINS	TEXT	DT (111516, DCM, "Medication Type")	1-n	U		
15	>>>	HAS PROPERTIES	CODE	EV (111528, DCM, "Ongoing")	1	U		DCID (230) Yes-No
16	>>	CONTAINS	CODE	DT (111516, DCM, "Medication Type")	1-n	U		
17	>>>	HAS PROPERTIES	NUM	DT (G-C0B7, SRT, "Dosage")	1	U		
18	>>>	HAS PROPERTIES	CODE	EV (111528, DCM, "Ongoing")	1	U		DCID (230) Yes-No

Annex B DCMR Context Groups (Normative)

Modify the following Context Group in Part 16 Annex B DCMR Context Groups (Normative):

CID 3486 IVUS Measurement Sites

Context ID 3486

IVUS Measurement Sites

Type: Extensible Version: ~~20040614~~ 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	122380	Proximal Reference
DCM	122381	Distal Reference
DCM	122382	Site of Lumen Minimum
DCM	**122687**	**Site of Lumen Maximum**

Add the following Context Groups to Part 16 Annex B DCMR Context Groups (Normative):

CID 3802 Plaque Structures

Context ID 3802

Plaque Structures

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	R-40448	fibrous
SRT	M-50080	fatty degeneration
SRT	M-55420	pathologic calcification
SRT	M-72000	hyperplasia
SRT	G-A265	non-calcified
SRT	G-A660	mixed

388 **CID 3804 Stenosis Measurement Methods**

Context ID 3804

Stenosis Measurement Methods

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	122655	NASCET
DCM	122656	ECST
DCM	122650	Area Based Method
DCM	122651	Diameter Based Method

392

CID 3805 Stenosis Types

Context ID 3805

396 **Stenosis Types**

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	D3-81100	arteriosclerotic vascular disease
SRT	M-01460	compression
SRT	R-40448	fibrous
SRT	D3-80505	Raynaud's disease
SRT	M-300F2	entrapment
SRT	D3-80650	vasculitis
SRT	R-423C3	thrombosis
SRT	M-35300	embolism
SRT	D3-80033	cystic adventitial disease

CID 3806 Stenosis Shape

400 **Context ID 3806**

Stenosis Shape

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	R-4047B	concentric
SRT	R-40416	eccentric

404

CID 3807 Volume Measurement Methods

Context ID 3807

Volume Measurement Methods

408 **Type: Extensible Version: 20051103**

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	122650	Area Based Method
DCM	122651	Diameter Based Method
DCM	122652	Volume Based Method

CID 3808 Aneurysm Types

412 **Context ID 3808**

Aneurysm Types

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-32270	dissecting aneurysm
SRT	D3-80017	inflammatory aneurysm
SRT	M-32201	ruptured aneurysm
SRT	M-24614	berry aneurysm
SRT	M-32240	mixed aneurysm
SRT	M-32410	racemose aneurysm
SRT	D3-80002	cirsoid aneurysm
SRT	M-32320	mycotic aneurysm
SRT	M-32206	compound aneurysm
SRT	M-32310	miliary aneurysm
SRT	M-32340	saccular aneurysm
SRT	M-32221	varicose aneurysm
SRT	M-32350	fusiform aneurysm
SRT	M-32210	traumatic aneurysm
SRT	M-32202	thrombosed aneurysm
SRT	M-32203	expanding aneurysm
SRT	M-32204	calcified aneurysm

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-32208	multiple aneurysm
SRT	M-32360	cylindroid aneurysm
SRT	M-32260	serpentine aneurysm

CID 3809 Associated Conditions

Context ID 3809

Associated Conditions

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	D6-90600	Marfan's Syndrome
SRT	M-10000	Traumatic Abnormality

CID 3810 Vascular Morphology

Context ID 3810

Vascular Morphology

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-01470	plaque
SRT	M-34200	stenosis
SRT	M-32200	aneurysm
SRT	D3-81310	arterial dissection
SRT	A-25500	stent
SRT	M-34000	occlusion
SRT	M-39390	arteriovenous fistula
SRT	M-91200	angioma
SRT	M-32000	dilatation
SRT	R-FAB5E	vascular coiling
SRT	M-31790	tortuosity
SRT	M-32700	diverticulum
SRT	M-520F8	vascular sclerosis

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	D-80515	thrombosis
SRT	M-32390	pseudoaneurysm
SRT	M-35300	embolism
SRT	M-74880	fibromuscular dysplasia

CID 3813 Stent Findings

Context ID 3813

Stent Findings

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-75300	hypoplasia
SRT	M-34200	stenosis
DCM	122680	endoleak
SRT	DD-661D2	migration of implant or internal device
DCM	122684	stent disintegration
DCM	122683	stent fracture

CID 3814 Stent Composition

Context ID 3814

Stent Composition

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	A-25502	metal stent
SRT	A-25501	plastic stent

CID 3815 Source of Vascular Finding

Context Group 3815

Source of Vascular Finding

444 **Type: Extensible Version: 20051103**

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	D3-80515	thrombosis
SRT	M-35300	embolism
SRT	M-72000	hyperplasia
SRT	D3-80650	vasculitis
SRT	M-8FFFF	tumor
SRT	DD-00001	trauma
SRT	G-B102	surgical
SRT	R-422A4	after procedure

CID 3817 Vascular Sclerosis Types

448 **Context ID 3817**

Vascular Sclerosis Types

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-52450	adventitial degeneration
SRT	M-52210	arteriosclerosis with fibrinoid necrosis
SRT	M-52200	arteriolosclerosis
SRT	M-52000	arteriosclerosis
SRT	M-52100	atheroma
SRT	M-52120	atherosclerotic fibrous plaque
SRT	M-52101	calcified atheromatous plaque
SRT	M-52102	complicated atheromatous plaque
SRT	M-52470	cystic medical necrosis
SRT	M-52240	elastic vascular sclerosis
SRT	M-52130	fatty streaks
SRT	M-52300	fibroelastosis
SRT	M-52302	diffuse fibroelastosis
SRT	M-52301	focal fibroelastosis
SRT	M-52500	phlebosclerosis

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	M-52103	ulcerated atheromatous plaque
SRT	M-52400	vascular wall degeneration

CID 3820 Non-invasive Vascular Procedures

Context ID 3820

Non-invasive Vascular Procedures

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	P5-0903A	vascular MRI
SRT	P5-09011	cardiac MRI
SRT	P5-0807F	cardiovascular CT
SRT	P5-0802B	CT of abdominal aorta
SRT	P5-00A0D	trunk angiography
SRT	P5-009BF	peripheral angiography

CID 3821 Papillary Muscle Included/Excluded

Context ID 3821

Papillary Muscle Included/Excluded

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	122620	Papillary Muscle Excluded
DCM	122621	Papillary Muscle Included

CID 3823 Respiratory Status

Context ID 3823

Respiratory Status

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	F-20010	inspiration
SRT	F-20020	expiration
SRT	F-20030	autonomous breathing
SRT	R-40928	Valsalva maneuver
DCM	122612	central breathing position
SRT	F-201BD	shallow breathing

CID 3826 Heart Rhythm

Context ID 3826

Heart Rhythm

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	F-33300	normal sinus rhythm
SRT	D3-31500	atrial arrhythmia
SRT	D3-31715	ventricular arrhythmia

CID 3827 Vessel Segments

Context ID 3827

Vessel Segments

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
INCLUDE CID(12105) Intracranial Cerebral Vessels		
INCLUDE CID(12106) Unpaired Cerebral Vessels		
INCLUDE CID(12104) Extracranial Arteries		

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
INCLUDE CID(12109) Lower Extremity Arteries		
INCLUDE CID(12110) Lower Extremity Veins		
INCLUDE CID(12107) Upper Extremity Arteries		
INCLUDE CID(12108) Upper Extremity Veins		
INCLUDE CID(12115) Renal Vessels		
INCLUDE CID(12111) Abdominal Arteries (lateral)		
INCLUDE CID(12112) Abdominal Arteries (unilateral)		
INCLUDE CID(12113) Abdominal Veins (lateral)		
INCLUDE CID(12114) Abdominal Veins (unilateral)		
INCLUDE CID(3015) Coronary Arteries		
INCLUDE CID(3839) Cardiac Veins		
INCLUDE CID(3840) Pulmonary Veins		

484 **CID 3829 Pulmonary Arteries**

Context ID 3829

Pulmonary Arteries

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	T-44101	entire trunk of pulmonary artery
SRT	T-44011	entire suprapulmonic valve area
SRT	T-35250	pulmonary valve sinuses
SRT	T-44401	entire left pulmonary artery
SRT	T-44201	entire right pulmonary artery

488

CID 3831 Stenosis Length

Context ID 3831

Stenosis Length

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	R-404AC	long
SRT	R-4235F	short

CID 3832 Stenosis Grade

Context ID 3832

Stenosis Grade

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	G-A003	severe
SRT	G-A002	moderate
SRT	R-404FA	mild

CID 3833 Cardiac Ejection Fraction

Context ID 3833

Cardiac Ejection Fraction

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
LN	8810-4	Left ventricular ejection fraction by CT
LN	8817-9	Right ventricular ejection fraction by CT
LN	8811-2	Left ventricular ejection fraction by MR
LN	8818-7	Right ventricular ejection fraction by MR

508 **CID 3835 Volume Measurements**

Context ID 3835

Volume Measurements

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
INCLUDE CID(3468) ED Volume		
INCLUDE CID(3469) ES Volume		
SRT	F-32120	stroke volume

512

CID 3836 Time-based Perfusion Measurements

Context ID 3836

516 **Time-based Perfusion Measurements**

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	122631	Signal Earliest Peak Time
DCM	122633	Signal Increase Start Time
DCM	122634	Signal Time to Peak
DCM	122638	Signal Baseline Start
DCM	122639	Signal Baseline End

CID 3837 Fiducial Feature

520 **Context ID 3837**

Fiducial Feature

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	T-3215A	Ostium
SRT	T-46600	Renal Artery
SRT	T-42580	Aortic Bifurcation
SRT	R-10258	Common Iliac Bifurcation

524 **CID 3838 Diameter Derivation**

Context ID 3838

Diameter Derivation

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
INCLUDE CID(3488) Min/Max/Mean		
SRT	G-A117	Transverse
DCM	122675	Anterior-Posterior

528

CID 3839 Coronary Veins

Context ID 3839

532 **Coronary Veins**

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	T-48343	Azygos Vein
SRT	T-48418	Coronary Sinus
SRT	T-48421	Great Cardiac Vein
SRT	T-48436	Small Cardiac Vein
SRT	T-48440	Anterior Cardiac Vein
SRT	T-484A1	Atrial Vein
SRT	T-484A3	Atrioventricular Vein
SRT	T-48431	Middle Cardiac Vein
SRT	T-484A2	Ventricular Vein
SRT	T-48405	Smallest Cardiac Vein

CID 3840 Pulmonary Veins

536 **Context ID 3840**

Pulmonary Veins

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	T-48500	Entire Pulmonary Vein
SRT	T-4858E	Entire Left Pulmonary Vein
SRT	T-4854B	Entire Inferior Left Pulmonary Vein
SRT	T-48537	Entire Superior Left Pulmonary Vein
SRT	T-48504	Entire Right Pulmonary Vein
SRT	T-48526	Entire Inferior Right Pulmonary Vein
SRT	T-48515	Entire Superior Right Pulmonary Vein

540

CID 3843 Myocardial Subsegment

Context ID 3843

544 **Myocardial Subsegment**

Type: Extensible Version: 20051103

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	R-427E6	endocardial
SRT	R-40940	epicardial

Annex D DICOM Controlled Terminology Definitions (Normative)

548 ***Modify the following code in Part 16 Annex D DICOM Controlled Terminology Definitions (Normative):***

122447	Wall Mass	Mass of the chamber wall **(myocardium)**

Add the following codes and definitions to Part 16 Annex D DICOM Controlled Terminology Definitions (Normative):

Code Value (008,0100)	Code Meaning (008,0104)	Definition
122600	Cardiovascular Analysis Report	Report of a Cardiovascular Analysis, typically from a CT or MR study
122601	Ventricular Analysis	Ventricular Analysis
122602	Myocardial Perfusion Analysis	Myocardial Perfusion Analysis
122603	Calcium Scoring Analysis	Calcium Scoring Analysis
122604	Flow Quantification	Flow Quantification Analysis
122605	Vascular Morphological Analysis	Vascular Morphological Analysis
122606	Vascular Functional Analysis	Vascular Functional Analysis
122607	Thickening Analysis	Analysis of myocardial wall thickening
122608	Absolute Values Of Ventricular Measurements	Section Heading for absolute values of ventricular measurements
122609	Normalized Values Of Ventricular Measurements	Results of normalizing ventricular measurements
122611	Reference Point	Reference Point of a measurement
122612	Central breathing position	Central breathing position between inspiration and expiration
122616	Peak Ejection Rate	Peak of the ventricular ejection rate
122617	Peak Ejection Time	Time of the peak of ventricular ejection
122618	Peak Filling Rate	Peak of the fluid filling rate
122619	Peak Filling Time	Time interval from a given reference point (e.g. end systole) until time of peak filling
122620	Papillary Muscle Excluded	Papillary muscle was excluded from the measurement
122621	Papillary Muscle Included	Papillary muscle was included in the measurement

Code Value (008,0100)	Code Meaning (008,0104)	Definition
122624	Wall Thickness Ratio end-systolic to end-diastolic	The ratio of the end-systolic wall thickness compared to the end-diastolic wall thickness
122627	Curve Fit Method	The method to smooth a ventricular volume as a function of time
122628	Baseline Result Correction	Baseline correction used in the calculation of the results
122631	Signal Earliest Peak Time	The time in a dynamic set of images at which the first peak of the signal is observed for the analysed myocardial wall segments.
122633	Signal Increase Start Time	This is the time at which the signal begins to increase.
122634	Signal Time to Peak	Time interval between the beginning of the signal increase to the time at which the signal intensity reaches its first maximum in a dynamic set of images.
122635	MR Perfusion Peak	Peak of the MR perfusion signal
122636	MR Perfusion Slope	Signal intensity as a function of time. It is the change in the signal intensity divided by the change in the time.
122637	MR Perfusion Time Integral	MR perfusion time integral from baseline (foot time) to earliest peak
122638	Signal Baseline Start	First time point in a dynamic set of images used in the calculation of the baseline signal intensity for each myocardial wall segment.
122639	Signal Baseline End	Last time point in a dynamic set of images used in the calculation of the baseline signal intensity for each myocardial wall segment.
122640	Image Interval	The time delta between images in a dynamic set of images.
122642	Velocity Encoding Minimum Value	The minimum velocity encoded by the phase encoding gradient
122643	Velocity Encoding Maximum Value	The maximum velocity encoded by the phase encoding gradient
122645	Net Forward Volume	Forward volume-reverse volume
122650	Area Based Method	Area Based Method for estimating volume or area
122651	Diameter Based Method	Diameter Based Method for estimating volume, area or diameter
122652	Volume Based Method	Volume Based Method for estimating volume
122655	NASCET	A method of diameter measurements according to NASCET (North American Symptomatic Carotid Endarterectomy Trial)
122656	ECST	A method of diameter measurements according to ECST (European Carotid Surgery Trial)

Code Value (008,0100)	Code Meaning (008,0104)	Definition
122657	Agatston Score Threshold	Agatston Score Threshold
122658	Calcium Mass Threshold	Calcium Mass Threshold
122659	Calcium Scoring Calibration	Calcium Scoring Calibration
122660	Calcium Volume	Calcium Volume
122661	Calcium Mass	Calcium Mass
122664	Late Contrast Enhancement	Delayed hyperenhancement of a tissue observed in an image acquired after injection of contrast media.
122665	Time interval since injection of contrast media	Time interval since injection of contrast media
122666	Time relative to R-wave peak	Time relative to R-wave peak
122667	Blood velocity vs. time of cardiac cycle	Relationship between blood velocity and time relative to R-wave peak
122668	Time interval since detection of contrast bolus	Time interval since detection of contrast bolus
122670	Papillary Muscle Included/Excluded	Indicates if the papillary muscle was included or excluded in the measurement
122675	Anterior-Posterior	Anterior to Posterior direction
122680	endoleak	Persistent flow of blood into the stent-grafting
122683	Stent Fracture	Fracture of a stent
122684	Stent Disintegration	Disintegration of a stent
122685	Stent Composition	Material that a stent consists of
122686	Parent Vessel Finding	Finding about the characteristics of the parent vessel of a vessel
122687	Site of Lumen Maximum	Site of Maximal lumen diameter of a vessel
122698	X-Concept	The physical domain (time, space, etc.) to the horizontal axis of the graphical presentation.
122699	Y-Concept	The physical domain (time, space, etc.) to the vertical axis of the graphical presentation.

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