

DICOM Correction Item

Correction Number CP-857	
Log Summary: Template format corrections to TID 40xx	
Type of Modification	Name of Standard
Clarification	PS 3.16-2008
<p>Rationale for Correction:</p> <p>Several concept names and unit value constraints in TID 40xx for Mammography CAD SR are missing "EV" or "DT". Also, included template and referenced context group names are enclosed in quotes unnecessarily. One "EV" is missing from TID 4104 for Chest CAD SR. Make corrections according to PS 3.16, section 6.1.</p> <p>Note: TID 4002 was corrected in CP-767.</p>	
<p>Sections of documents affected</p> <p>PS 3.16, Annex A</p>	
Correction Wording:	

Modify the following Mammography CAD SR and Chest CAD SR templates:

TID 4000
MAMMOGRAPHY CAD DOCUMENT ROOT
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINER	EV(111036, DCM, "Mammography CAD Report")	1	M		
2	>	HAS CONCEPT MOD	INCLUDE DTID (1204) "Language of Content Item and Descendants"	1	M		
3	>	CONTAINS	CONTAINER EV(111028, DCM, "Image Library")	1	M		
4	>>	CONTAINS	INCLUDE DTID (4020) "CAD Image Library Entry"	1-n	M		\$ImageLaterality = DCID (6022) "Side", \$ImageView = DCID (4014) "View for Mammography", \$ImageViewMod = DCID (4015) "View Modifier for Mammography"
5	>	CONTAINS	INCLUDE DTID (4001) "Mammography CAD Overall Impression / Recommendation"	1	M		
6	>	CONTAINS	CODE EV(111064, DCM, "Summary of Detections")	1	M		DCID (6042) "Status of Results"
7	>>	INFERRED FROM	INCLUDE DTID (4015) "CAD Detections Performed"	1	MC	Shall be present unless the value of (111064, DCM, "Summary of Detections") is (111225, DCM, "Not Attempted")	\$DetectionCode = DCID (6014) "Mammography Single Image Finding"
8	>	CONTAINS	CODE EV(111065, DCM, "Summary of Analyses")	1	M		DCID (6042) "Status of Results"
9	>>	INFERRED	INCLUDE DTID (4016)	1	MC	Shall be present unless the	\$AnalysisCode = DCID (6043)

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
	FROM		“CAD Analyses Performed“			value of (111065, DCM, “Summary of Analyses”) is (111225, DCM, “Not Attempted“)	“Types of Mammography CAD Analysis“

TID 4001
MAMMOGRAPHY CAD OVERALL IMPRESSION/RECOMMENDATION
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111017, DCM, “CAD Processing and Findings Summary“)	1	M		DCID (6047) “CAD Processing and Findings Summary“
2	> HAS PROPERTIES	INCLUDE	DTID (4002) “Mammography CAD Impression/Recommendation Body“	1	U		
3	> INFERRED FROM	INCLUDE	DTID (4003) “Mammography CAD Individual Impression/Recommendation “	1-n	MC	Shall be present if 1 or more (111059, DCM, “Single Image Finding”) or (111015, DCM, “Composite Feature”) content items are reported.	

TID 4003
MAMMOGRAPHY CAD INDIVIDUAL IMPRESSION/RECOMMENDATION
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINER	<u>EV</u> (111034, DCM, “Individual Impression/Recommendation“)	1	M		
2	> HAS CONCEPT MOD	CODE	<u>EV</u> (111056, DCM, “Rendering Intent“)	1	M		DCID (6034) “Intended Use of CAD Output“
3	> CONTAINS	INCLUDE	DTID (4002) “Mammography CAD Impression / Recommendation Body“	1	U		
4	> CONTAINS	INCLUDE	DTID (4004) “Mammography CAD Composite Feature“	1-n	MC	At least one of rows 4, 5 shall be present.	
5	> CONTAINS	INCLUDE	DTID (4006) “Mammography CAD Single Image Finding“	1-n	MC	At least one of rows 4, 5 shall be present.	

TID 4004
MAMMOGRAPHY CAD COMPOSITE FEATURE
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111015, DCM, “Composite Feature“)	1	M		DCID (6016) “Mammography Composite Feature“
2	> HAS CONCEPT MOD	CODE	<u>EV</u> (111056, DCM, “Rendering Intent“)	1	M		DCID (6034) “Intended Use of CAD Output“
3	> HAS	INCLUDE	DTID (4005)	1	M		

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
	PROPERTIES		“Mammography CAD Composite Feature Body”				
4	> INFERRED FROM	INCLUDE	DTID (4004) “Mammography CAD Composite Feature”	1-n	MC	At least two items shall be present: two of row 4, two of row 5, or one of each.	
5	> INFERRED FROM	INCLUDE	DTID (4006) “Mammography CAD Single Image Finding”	1-n	MC	At least two items shall be present: two of row 4, two of row 5, or one of each.	
6	> HAS OBS CONTEXT	INCLUDE	DTID (4022) “CAD Observation Context”	1	MC	Shall be present only if this feature is incorporated from a different report than its parent.	

TID 4005
MAMMOGRAPHY CAD COMPOSITE FEATURE BODY
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111016, DCM, “Composite type”)	1	M		DCID (6035) “Composite Feature Relations”. The value shall be <u>EV</u> (111155, DCM, “Target content items are related contra-laterally”) if the parent content item has code value (F-01792, SRT, “Focal asymmetric breast tissue”) or (F-01793, SRT, “Asymmetric breast tissue”).
2		CODE	<u>EV</u> (111057, DCM, “Scope of Feature”)	1	M		DCID (6036) “Scope of Feature”
3		INCLUDE	DTID (4019) “CAD Algorithm Identification”	1	M		
4		NUM	<u>EV</u> (111011, DCM, “Certainty of Feature”)	1	U		UNITS = <u>EV</u> (% , UCUM, “Percent”) Value = 0 – 100
5		NUM	<u>EV</u> (111047, DCM, “Probability of cancer”)	1	UC	May be present only if value of parent is <u>not</u> (111102, DCM, “Non-lesion”)	UNITS = <u>EV</u> (% , UCUM, “Percent”) Value = 0 – 100
6		CODE	<u>EV</u> (111042, DCM, “Pathology”)	1-n	U		BCID (6030) “Mammography Pathology Codes”
7		INCLUDE	DTID (1400) “Linear Measurement”	1-n	U		The by-reference relationship to the IMAGE in TID (1400) “Linear Measurement” shall be used.
8		INCLUDE	DTID (1401) “Area Measurement”	1-n	U		The by-reference relationship to the IMAGE in TID (1401) “Area Measurement” shall be used.
9		INCLUDE	DTID (1402) “Volume Measurement”	1-n	U		The by-reference relationship to the IMAGE in TID (1402) “Volume Measurement” shall be used.
10		INCLUDE	DTID (4021) “Mammography CAD Geometry”	1-n	U		
11		NUM	DCID (6037) “Mammography Quantitative Temporal Difference Type”	1-n	UC	May be present only if the value of (111016, DCM, “Composite type”) is (111153, DCM, “Target content items are related	UNITS = DCID (7460) “Units of Linear Measurement”, DCID (7461) “Units of Area Measurement”, DCID (7462)

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
							temporally")	"Units of Volume Measurement" or DT (1, UCUM, "no units")
12	>	R-INFERRED FROM	NUM		2	U		The referenced numeric values shall have the same Concept Name. Their UNITS shall be the same as row 11
13			CODE	EV (111049, DCM, "Qualitative Difference")	1-n	UC	May be present only if the value of (111016, DCM, "Composite type") is (111153, DCM, "Target content items are related temporally")	DCID (6038) "Mammography Qualitative Temporal Difference Type"
14	>	HAS PROPERTIES	TEXT	EV (111021, DCM, "Description of Change")	1	U		
15	>	R-INFERRED FROM	CODE		2	M		The referenced code values shall have the same Concept Name and be from the same context group.
16			CODE	EV (111048, DCM, "Quadrant location")	1	U		DCID (6020) "Quadrant Location"
17			CODE	EV (111014, DCM, "Clockface or region")	1	U		DCID (6018) "Clockface Location or Region"
18			CODE	EV (111020, DCM, "Depth")	1	U		DCID (6024) "Depth"
19			CODE	EV (111035, DCM, "Lesion Density")	1	UC	May be present only if value of parent is (F-01791, SRT, "Mammographic breast mass") or (F-01796, SRT, "Mammography breast density")	DCID (6008) "Density Modifier"
20			CODE	EV (M-020F9, SNM3, "Shape")	1	UC	May be present only if value of parent is (F-01791, SRT, "Mammographic breast mass") or (F-01796, SRT, "Mammography breast density")	DCID (6004) "Mammography Characteristics of Shape"
21			CODE	EV (111037, DCM, "Margins")	1-n	UC	May be present only if value of parent is (F-01791, SRT, "Mammographic breast mass") or (F-01796, SRT, "Mammography breast density")	DCID (6006) "Mammography Characteristics of Margin"
22			CODE	EV (111009, DCM, "Calcification Type")	1-n	UC	May be present only if value of parent is (F-01775, SRT, "Calcification Cluster") or (F-01776, SRT, "Individual Calcification")	DCID (6010) "Mammography Calcification Types"
23			CODE	EV (111008, DCM, "Calcification Distribution")	1	UC	May be present only if value of parent is (F-01775, SRT, "Calcification Cluster")	DCID (6012) "Calcification Distribution Modifier"
24			NUM	EV (111038, DCM, "Number of calcifications")	1	UC	May be present only if value of parent is (F-01775, SRT, "Calcification Cluster")	UNITS = EV (1, UCUM, "no units") Value = Integer 1 – n
25			NUM	DCID (6142) Calculated Value	1-n	U		
26	>	HAS CONCEPT MOD	CODE	EV (121401, DCM, "Derivation")	1	M		DCID (6140) Calculation Methods
27	>	INFERRED FROM	TEXT	EV (112034, DCM, "Calculation Description")	1	U		

TID 4006
MAMMOGRAPHY CAD SINGLE IMAGE FINDING
Type: Non-Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	EV(111059, DCM, "Single Image Finding")	1	M		DCID (6014) "Mammography Single Image Finding"
2	>	HAS CONCEPT MOD	CODE	EV(111056, DCM, "Rendering Intent")	1	M		DCID (6034) "Intended Use of CAD Output"
3	>>	HAS PROPERTIES	NUM	EV(111071, DCM, "CAD Operating Point")	1	UC	IFF value of row 2 is (111151, DCM, "Presentation Optional") and row 9 of TID 4017 is present	UNITS = DT ({1:n}, UCUM, "range: 1:n"), where n is the maximum specified in Row 9 of TID 4017. Value is restricted to being an integer
4	>	HAS PROPERTIES	INCLUDE	DTID (4019) "CAD Algorithm Identification"	1	M		
5	>	HAS PROPERTIES	NUM	EV(111012, DCM, "Certainty of Finding")	1	U		UNITS = EV(%), UCUM, "Percent" Value = 0 – 100
6	>	HAS PROPERTIES	NUM	EV(111047, DCM, "Probability of cancer")	1	UC	May be present unless value of parent is (F-01710,SRT, "Breast composition"), (111100, DCM, "Breast geometry"), (T-04100, SNM3, "Nipple"), (111099, DCM, "Selected region"), (111101, DCM, "Image quality") or (111102, DCM, "Non-lesion")	UNITS = EV(%), UCUM, "Percent" Value = 0 – 100
7	>	HAS PROPERTIES	INCLUDE	DTID (4021) "Mammography CAD Geometry"	1	MC	Shall be present unless value of parent is (F-01710,SRT, "Breast composition"), (111100, DCM, "Breast geometry") or (111101, DCM, "Image quality")	
8	>	HAS PROPERTIES	INCLUDE	DTID (4007) "Mammography CAD Breast Composition"	1	MC	Shall be present only if value of parent is (F-01710,SRT, "Breast composition")	
9	>	R-INFERRED FROM	CODE		1-n	UC	May be present only if value of parent is (F-01710,SRT, "Breast composition")	Shall reference a (111059, DCM, "Single Image Finding") of value: EV (111100, DCM, "Breast geometry")
10	>	HAS PROPERTIES	INCLUDE	DTID (4008) "Mammography CAD Breast Geometry"	1	MC	Shall be present only if value of parent is (111100, DCM, "Breast geometry")	
11	>	HAS PROPERTIES	INCLUDE	DTID (4009) "Mammography CAD Individual Calcification"	1	UC	May be present only if value of parent is (F-01776,SRT, "Individual Calcification")	
12	>	HAS PROPERTIES	INCLUDE	DTID (4010) "Mammography CAD Calcification Cluster"	1	UC	May be present only if value of parent is (F-01775,SRT, "Calcification Cluster")	
13	>	HAS PROPERTIES	INCLUDE	DTID (4011) "Mammography CAD Density"	1	UC	May be present only if value of parent is (F-01796,SRT,"Mammography breast density")	
14	>	HAS PROPERTIES	CODE	EV(111297,DCM, "Nipple Characteristic")	1	UC	May be present only if value of parent is (T-04100, SNM3, "Nipple")	DCID (6039) "Nipple Characteristic"
15	>	HAS PROPERTIES	INCLUDE	DTID (4012) "Mammography CAD Non-	1	MC	Shall be present only if value of parent is (111102, DCM, "Non-	

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
		ES		Lesion ⁴			lesion")	
16	>	HAS PROPERTIES	INCLUDE	DTID (4013) ⁴ "Mammography CAD Selected Region ⁴	1	MC	Shall be present only if value of parent is (111099, DCM, "Selected Region")	
17	>	R-INFERRED FROM	IMAGE		1	MC	Shall be present only if value of parent is (111101, DCM, "Image quality") and row 18 is not present	Shall reference an IMAGE content item in the (111028, DCM, "Image Library")
18	>	HAS PROPERTIES	SCCOORD	EV(111030, DCM, "Image Region")	1-n	MC	Shall be present only if value of parent is (111101, DCM, "Image quality") and row 17 is not present	
19	>>	R-SELECTED FROM	IMAGE		1	M		All the (111030, DCM, "Image Region") content items in a single invocation of this template shall reference the same IMAGE content item in the (111028, DCM, "Image Library")
20	>	HAS PROPERTIES	INCLUDE	DTID (4014) ⁴ "CAD Image Quality ⁴	1-n	MC	Shall be present only if value of parent is (111101, DCM, "Image quality")	\$QualityFinding = DCID (6041) ⁴ "Mammography Image Quality Finding ⁴ , \$QualityStandard = DCID (6045) ⁴ "Mammography Types of Quality Control Standard ⁴
21	>	HAS PROPERTIES	NUM	DCID (6142) Calculated Value	1-n	U		
22	>>	HAS CONCEPT MOD	CODE	EV (121401, DCM, "Derivation")	1	M		DCID (6140) Calculation Methods
23	>>	INFERRED FROM	TEXT	EV (112034, DCM, "Calculation Description")	1	U		
24	>	INFERRED FROM	INCLUDE	DTID (4006) ⁴ "Mammography CAD Single Image Finding ⁴	1-n	UC	May be present only if value of parent is (F-01775,SRT, "Calcification Cluster")	EV (F-01776,SRT, "Individual Calcification")
25	>	HAS OBS CONTEXT	INCLUDE	DTID (4022) ⁴ "CAD Observation Context ⁴	1	MC	Shall be present only if this finding is incorporated from a different report than its parent.	

TID 4007
MAMMOGRAPHY CAD BREAST COMPOSITION
 Type: Non-Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	<u>EV</u> (F-01710,SRT, "Breast composition")	1	MC	At least one of row 1 or 2 shall be present	DCID (6000) ⁴ "Overall Breast Composition ⁴
2			NUM	<u>EV</u> (111046, DCM, "Percent Glandular Tissue")	1	MC	At least one of row 1 or 2 shall be present	UNITS = <u>EV</u> (%), UCUM, "Percent") Value = 0 – 100

TID 4008
MAMMOGRAPHY CAD BREAST GEOMETRY
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		SCoord	<u>EV</u> (111007, DCM, "Breast Outline Including Pectoral Muscle Tissue")	1	M		GRAPHIC TYPE = {POLYLINE}
2	> R-SELECTED FROM	IMAGE		1	M		Shall reference an IMAGE content item in the (111028, DCM, "Image Library")
3		SCoord	<u>EV</u> (111045, DCM, "Pectoral Muscle Outline")	1	U		GRAPHIC TYPE = {POLYLINE}
4	> R-SELECTED FROM	IMAGE		1	M		Shall reference the same node as row 2

TID 4009
MAMMOGRAPHY CAD INDIVIDUAL CALCIFICATION
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111009, DCM, "Calcification Type")	1-n	MC	At least one of rows 1, 2, 3 shall be present	DCID (6010) "Mammography Calcification Types"
2		INCLUDE	DTID (1400) "Linear Measurement"	1-n	MC	At least one of rows 1, 2, 3 shall be present	The by-reference relationship to the IMAGE in TID (1400) "Linear Measurement" shall be used.
3		INCLUDE	DTID (1401) "Area Measurement"	1-n	MC	At least one of rows 1, 2, 3 shall be present	The by-reference relationship to the IMAGE in TID (1401) "Area Measurement" shall be used.
4		INCLUDE	DTID (1402) "Volume Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1402) "Volume Measurement" shall be used.

TID 4010
MAMMOGRAPHY CAD CALCIFICATION CLUSTER
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111009, DCM, "Calcification Type")	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	DCID (6010) "Mammography Calcification Types"
2		CODE	<u>EV</u> (111008, DCM, "Calcification Distribution")	1	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	DCID (6012) "Calcification Distribution Modifier"
3		NUM	<u>EV</u> (111038, DCM, "Number of calcifications")	1	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	UNITS = <u>EV</u> (1, UCUM, "no units") Value = Integer >= 1
4		INCLUDE	DTID (1400) "Linear Measurement"	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	The by-reference relationship to the IMAGE in TID (1400) "Linear Measurement" shall be used.
5		INCLUDE	DTID (1401) "Area Measurement"	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	The by-reference relationship to the IMAGE in TID (1401) "Area Measurement" shall be used.
6		INCLUDE	DTID (1402) "Volume Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1402) "Volume Measurement" shall be used.

TID 4011
MAMMOGRAPHY CAD DENSITY
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111035, DCM, "Lesion Density")	1	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	DCID (6008) "Density Modifier"
2		CODE	<u>EV</u> (M-020F9, SNM3, "Shape")	1	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	DCID (6004) "Mammography Characteristics of Shape"
3		CODE	<u>EV</u> (111037, DCM, "Margins")	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	DCID (6006) "Mammography Characteristics of Margin"
4		INCLUDE	DTID (1400) "Linear Measurement"	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	The by-reference relationship to the IMAGE in TID (1400) "Linear Measurement" shall be used.
5		INCLUDE	DTID (1401) "Area Measurement"	1-n	MC	At least one of rows 1, 2, 3, 4, 5 shall be present	The by-reference relationship to the IMAGE in TID (1401) "Area Measurement" shall be used.
6		INCLUDE	DTID (1402) "Volume Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1402) "Volume Measurement" shall be used.

TID 4012
MAMMOGRAPHY CAD NON-LESION
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	<u>EV</u> (111039, DCM, "Object type")	1	M		DCID (6040) "Non-Lesion Object Type"
2		INCLUDE	DTID (1400) "Linear Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1400) "Linear Measurement" shall be used.
3		INCLUDE	DTID (1401) "Area Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1401) "Area Measurement" shall be used.
4		INCLUDE	DTID (1402) "Volume Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1402) "Volume Measurement" shall be used.

TID 4013
MAMMOGRAPHY CAD SELECTED REGION
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		TEXT	<u>EV</u> (111058, DCM, "Selected Region Description")	1	M		
2		INCLUDE	DTID (1400) "Linear Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1400) "Linear Measurement" shall be used.
3		INCLUDE	DTID (1401) "Area Measurement"	1-n	U		The by-reference relationship to the IMAGE in TID (1401)

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
							“Area Measurement” shall be used.
4		INCLUDE	DTID (1402) “Volume Measurement”	1-n	U		The by-reference relationship to the IMAGE in TID (1402) “Volume Measurement” shall be used.

TID 4014
CAD IMAGE QUALITY
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	EV(111052, DCM, “Quality Finding”)	1	M		\$QualityFinding
2	>	HAS PROPERTIES	EV(111050, DCM, “Quality Assessment”)	1	U		DCID (6044) “Types of Image Quality Assessment”
3	>	HAS PROPERTIES	EV(111051, DCM, “Quality Control Standard”)	1	UC	Shall be present if row 2 is present.	\$QualityStandard
4	>	HAS PROPERTIES	EV(111029, DCM, “Image Quality Rating”)	1	U		UNITS = EV({0:100}, UCUM, “range:0:100”) Value = 0 – 100

TID 4015
CAD DETECTIONS PERFORMED
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint	
1		CONTAINER	EV(111063, DCM, “Successful Detections”)	1	MC	Shall be present only if value of parent is (111222, DCM, “Succeeded”) or (111223, DCM, “Partially Succeeded”)		
2	>	CONTAINS	INCLUDE	DTID (4017) “CAD Detection Performed”	1-n	M		\$DetectionCode = \$DetectionCode
3		CONTAINER	EV(111025, DCM, “Failed Detections”)	1	MC	Shall be present only if value of parent is (111224, DCM, “Failed”) or (111223, DCM, “Partially Succeeded”)		
4	>	CONTAINS	INCLUDE	DTID (4017) “CAD Detection Performed”	1-n	M		\$DetectionCode = \$DetectionCode

TID 4016
CAD ANALYSES PERFORMED
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint	
1		CONTAINER	EV(111062, DCM, “Successful Analyses”)	1	MC	Shall be present only if value of parent is (111222, DCM, “Succeeded”) or (111223, DCM, “Partially Succeeded”)		
2	>	CONTAINS	INCLUDE	DTID (4018) “CAD Analysis Performed”	1-n	M		\$AnalysisCode=\$AnalysisCode
3		CONTAINER	EV(111024, DCM, “Failed Analyses”)	1	MC	Shall be present only if value of parent is (111224, DCM,		

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
						"Failed") or (111223, DCM, "Partially Succeeded")	
4	>	CONTAINS	INCLUDE	DTID (4018) "CAD Analysis Performed"	1-n	M	\$AnalysisCode=\$AnalysisCode

TID 4017
CAD DETECTION PERFORMED
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	EV(111022, DCM, "Detection Performed")	1	M	\$DetectionCode
2	>	HAS PROPERTIES	INCLUDE	DTID (4019) "CAD Algorithm Identification"	1	M	
3	>	HAS PROPERTIES	IMAGE		1-n	MC	At least one of row 3, 4, 5 or 6 shall be present
4	>	R-HAS PROPERTIES	IMAGE		1-n	MC	At least one of row 3,4,5 or 6 shall be present Shall reference IMAGE content item(s) in the (111028, DCM, "Image Library")
5	>	HAS PROPERTIES	UIDREF	EV(112002,DCM,"Series Instance UID")	1-n	MC	At least one of row 3,4,5 or 6 shall be present
6	>	HAS PROPERTIES	SCOORD	EV(111030, DCM, "Image Region")	1-n	MC	At least one of row 3,4,5 or 6 shall be present
7	>>	SELECTED FROM	IMAGE		1	MC	XOR row 8
8	>>	R-SELECTED FROM	IMAGE		1	MC	XOR row 7 Shall reference an IMAGE content item in the (111028, DCM, "Image Library")
9	>		INCLUDE	DTID (4023) CAD Operating Points	1	U	

TID 4018
CAD ANALYSIS PERFORMED
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	EV(111004, DCM, "Analysis Performed")	1	M	\$AnalysisCode
2	>	HAS PROPERTIES	INCLUDE	DTID (4019) "CAD Algorithm Identification"	1	M	
3	>	HAS PROPERTIES	IMAGE		1-n	MC	At least one of row 3, 4, 5 or 6 shall be present
4	>	R-HAS PROPERTIES	IMAGE		1-n	MC	At least one of row 3, 4, 5 or 6 shall be present Shall reference IMAGE content item(s) in the (111028, DCM, "Image Library")
5	>	HAS PROPERTIES	UIDREF	EV(112002,DCM,"Series Instance UID")	1-n	MC	At least one of row 3, 4, 5 or 6 shall be present
6	>	HAS PROPERTIES	SCOORD	EV(111030, DCM, "Image	1-n	MC	At least one of row 3, 4, 5 or 6

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
	ES		Region")			shall be present	
7	>> SELECTED FROM	IMAGE		1	MC	XOR Row 8	
8	>> R-SELECTED FROM	IMAGE		1	MC	XOR Row 7	Shall reference an IMAGE content item in the (111028, DCM, "Image Library")

TID 4022
CAD OBSERVATION CONTEXT
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		COMPOSITE	EV(111040, DCM, "Original Source")	1	MC	Shall be present if the original source is a DICOM object.	
2	> HAS CONCEPT MOD	INCLUDE	DTID (1204) "Language of Content Item and Descendants"	1	M		
3		INCLUDE	DTID (1001) "Observation Context"	1	M		

TID 4023
CAD OPERATING POINTS
 Type: Non-Extensible

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1	HAS PROPERTIES	NUM	<u>EV</u> (111072, DCM, "Maximum CAD Operating Point")	1	M		UNITS = DT ([arb'U], UCUM, "arbitrary unit") Value is restricted to being an integer
2	HAS PROPERTIES	NUM	<u>EV</u> (111092, DCM, "Recommended CAD Operating Point")	1	U		UNITS = DT ({0:n}, UCUM, "range: 0:n"), where n is the value specified in row 1 Value is restricted to being an integer
3	HAS PROPERTIES	CONTAINER	<u>EV</u> (111093, DCM, "CAD Operating Point Table")	1	U		
4	> CONTAINS	CODE	<u>EV</u> (122698, DCM, "X-Concept")	1	M		DCID (6048) CAD Operating Point Axis Label
5	> CONTAINS	CODE	<u>EV</u> (122699, DCM, "Y-Concept")	1	M		DCID (6048) CAD Operating Point Axis Label
6	> CONTAINS	NUM	<u>EV</u> (111071, DCM, "CAD Operating Point")	1-n	M	Number of instances of this row shall equal value of row 1, plus 1.	UNITS = DT ({0:n}, UCUM, "range: 0:n"), where n is the value of Row 1. Value is restricted to being an integer that is unique within the invocation of this template.
7	>> HAS PROPERTIES	TEXT	<u>EV</u> (111081, DCM, "CAD Operating Point Description")	1	U		
8	>> HAS PROPERTIES	NUM	The value of Row 4	1	U		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
9	>>	HAS PROPERTIES	NUM	The value of Row 5	1	U		

TID 4104
CHEST CAD SINGLE IMAGE FINDING
 Type: Non-Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	EV (111059, DCM, "Single Image Finding")	1	M		DCID (6101) Chest Finding or Feature
2	>	HAS CONCEPT MOD	CODE	EV (112024, DCM, "Single Image Finding Modifier")	1	U		DCID (6102) Chest Finding or Feature Modifier
3	>	HAS CONCEPT MOD	TEXT	EV (112050, DCM, "Anatomic Identifier")	1	U		
4	>	HAS CONCEPT MOD	CODE	EV (112003, DCM, "Associated Chest Component")	1	MC	Shall be present IFF value of row 1 is (112005, DCM, "Radiographic anatomy")	DCID (6100) Chest Component Categories
5	>	HAS CONCEPT MOD	CODE	EV (112037, DCM, "Non-lesion Modifier")	1	UC	May be present IFF value of row 1 is (111102, DCM, "Non-lesion")	DCID (6139) Non-lesion Modifiers
6	>	HAS CONCEPT MOD	CODE	EV (111056, DCM, "Rendering Intent")	1	M		DCID (6034) Intended Use of CAD Output
7	>>	HAS PROPERTIES	NUM	EV (111071, DCM, "CAD Operating Point")	1	UC	IFF value of row 6 is (111151, DCM, "Presentation Optional") and row 9 of TID 4017 is present	UNITS = DT ({1:n}, UCUM, "range: 1:n"), where n is the maximum specified in Row 9 of TID 4017. Value is restricted to being an integer
8	>	HAS OBS CONTEXT	INCLUDE	DTID (4108) Tracking Identifier	1	U		
9	>	HAS OBS CONTEXT	CODE	EV (112016, DCM, "Baseline Category")	1	U		DCID (6145) Baseline Category
10	>	HAS OBS CONTEXT	INCLUDE	DTID (4022) CAD Observation Context	1	MC	Shall be present IFF this finding is duplicated from a different report than its parent.	
11	>	HAS OBS CONTEXT	INCLUDE	DTID (4019) CAD Algorithm Identification	1	M		
12	>	HAS PROPERTIES	NUM	EV (111012, DCM, "Certainty of Finding")	1	U		UNITS = EV (% , UCUM, "Percent") Value = 0 – 100
13	>	HAS PROPERTIES	TEXT	EV (111058, DCM, "Selected Region Description")	1	MC	Shall be present IFF value of row 1 is (111099, DCM, "Selected region")	
14	>	HAS PROPERTIES	INCLUDE	DTID (4107) Chest CAD Geometry	1	MC	Shall be present unless value of row 1 is (111101, DCM, "Image quality")	
15	>	HAS PROPERTIES	INCLUDE	DTID (1400) Linear Measurement	1-n	U		
16	>	HAS PROPERTIES	INCLUDE	DTID (1401) Area Measurement	1-n	U		
17	>	HAS PROPERTIES	INCLUDE	DTID (1402) Volume Measurement	1-n	U		
18	>	HAS	INCLUDE	DTID (4105) Chest CAD	1	U		

NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
	PROPERTIES		Descriptors				
19>	INFERRED FROM	IMAGE		1	MC	Shall be present IFF value of row 1 is (111101, DCM, "Image quality") and rows 20 and 21 are not present	
20>	R-INFERRED FROM	IMAGE		1	MC	Shall be present IFF value of row 1 is (111101, DCM, "Image quality") and rows 19 and 21 are not present	Shall reference an IMAGE content item in the (111028, DCM, "Image Library")
21>	INFERRED FROM	SCoord	EV (111030, DCM, "Image Region")	1-n	MC	Shall be present IFF value of row 1 is (111101, DCM, "Image quality") and rows 19 and 20 are not present	
22>>	SELECTED FROM	IMAGE		1	MC	XOR row 23	All the row 21 content items in a single invocation of this template shall reference the same IMAGE
23>>	R-SELECTED FROM	IMAGE		1	MC	XOR row 22	All the row 21 content items in a single invocation of this template shall reference the same IMAGE content item in the (111028, DCM, "Image Library")
24>	HAS PROPERTIES	INCLUDE	DTID (4014) CAD Image Quality	1	MC	Shall be present IFF value of row 1 is (111101, DCM, "Image quality")	\$QualityFinding = DCID (6135) Chest Image Quality Finding \$QualityStandard = DCID (6136) Chest Types of Quality Control Standard