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Status	Assigned
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Submission Date	2024/11/28

Correction Number CP-2482

Log Summary: Correct inclusion of TID 300 with additional rows

Name of Standard

PS3.16

Rationale for Correction:

Some templates include TID 300 (which consists of a container with sub-ordinate content items), followed by nested content item rows, implaying that those rows are additional children of the included container.

This is not a valid pattern for template inclusion, and is confusing to automated template table processors.

Correct this by factoring out the TID 300 container content, and replacing the offending invocations with the direct use of the container content item and the inclusion of the new container content template.

Correction Wording:

Amend DICOM PS3.16 as follows (changes to existing text are bold and <u>underlined</u> for additions and struckthrough for removals):

TID 300 Measurement

This Template provides a general structure for a numeric measurement, together with evaluations of its normality and/or significance, and the inference source(s) for its value. This structure is instantiated by inclusion of this Template with specific contextual parameters from a parent Template.

Table TID 300. Parameters

Parameter Name	Parameter Usage
\$Measurement	Coded term or Context Group for Concept Name of measurement
\$Units	Measurement Unit
\$ModType	Modifier Name for Concept Name of measurement
\$ModValue	Modifier Value for Concept Name of measurement
\$Method	Value for Measurement Method
\$Derivation	Value for Measurement Derivation
\$TargetSite	Value(s) for Anatomic Location of measurement
\$TargetSiteLaterality	Laterality Value for Anatomic Location of measurement
\$TargetSiteMod	Modifier Value for Anatomic Location of measurement
\$Equation	Coded term or Context Group for the equation or table from which the measurement was derived or computed
\$ImagePurpose	Purpose of Reference for an image used as a source of the measurement
\$WavePurpose	Purpose of Reference for a waveform used as a source of the measurement
\$RefAuthority	Bibliographic reference or authority for statistical properties of a reference population
\$RangeAuthority	Bibliographic reference or authority for the normal range of the measurement
\$DerivationParameter	Coded term or Context Group for Concept Name of a derivation parameter
\$DerivationParameterUnits	Units of derivation parameter
\$PrecoordinatedMeasurementMeaning	Coded value for the precoordinated concept name of measurement

Type: Extensible Order: Significant No

Table TID 300. Measurement

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			NUM	\$Measurement	1	М		UNITS = \$Units

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
<u>1b</u>	<u>></u>		INCLUDE	DTID 30n	1	<u>M</u>		\$ModType = \$ModType
				"Measurement Content"				\$ModValue = \$ModValue
								\$Method = \$Method
								\$Derivation = \$Derivation
								\$TargetSite = \$TargetSite
								\$TargetSiteLaterality = \$TargetSiteLaterality
								\$TargetSiteMod = \$TargetSiteMod
								\$Equation = \$Equation
								\$ImagePurpose = \$ImagePurpose
								\$WavePurpose = \$WavePurpose
								\$RefAuthority = \$RefAuthority
								\$RangeAuthority = \$RangeAuthority
								\$DerivationParameter = \$DerivationParameter
								\$DerivationParameterUnits = \$DerivationParameterUnits
								\$PrecoordinatedMeasurementMeaning
2	>	HAS	CODE	\$ModType	1-n	¥		= \$PrecoordinatedMeasurementMeaning \$ModValue
		CONCEPT MOD		,aypc				V
3	>	HAS CONCEPT MOD	CODE	EV (370129005, SCT, "Measurement Method")	4	Ð		\$Method
4	>	HAS CONCEPT MOD	CODE	EV (121401, DCM, "Derivation")	4	¥		\$Derivation
5	>	HAS CONCEPT MOD	CODE	EV (363698007, SCT, "Finding Site")	1-n	¥		\$TargetSite
6	>>	HAS	CODE	EV (272741003, SCT,	4	¥		\$TargetSiteLaterality
		CONCEPT MOD		"Laterality")				Defaults to DCID 244 "Laterality"
7	>>	HAS CONCEPT MOD	CODE	DT (106233006, SCT, "Topographical modifier")	4	¥		\$TargetSiteMod
8	>	HAS PROPERTIES	INCLUDE	DTID 310 "Measurement Properties"	4	¥		\$RefAuthority = \$RefAuthority \$RangeAuthority = \$RangeAuthority
9	>	INFERRED FROM	NUM	\$DerivationParameter	1-n	uc	XOR Row 10	UNITS = \$DerivationParameterUnits

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
10	>	R-INFERRED FROM	NUM	\$DerivationParameter	1-n	₩€	XOR Row 9	UNITS = \$DerivationParameterUnits
11	>	INFERRED FROM	INCLUDE	DTID 315 "Equation or Table"	4	UC	XOR Row 12	\$Equation = \$Equation
12	>	INFERRED FROM	TEXT	DCID 228 "Equation or Table"	4	UC	XOR Row 11	
13	>		INCLUDE	DTID 320 "Image or Spatial Coordinates"	1-n	Ð		\$Purpose = \$ImagePurpose
14	>		INCLUDE	DTID 321 "Waveform or Temporal Coordinates"	1-n	Ð		\$Purpose = \$WavePurpose
15	>		INCLUDE	DTID 1000 "Quotation"	4	¥		
16	>	HAS CONCEPT MOD	TEXT	EV (121050, DCM, "Equivalent Meaning of Concept Name")	4	¥		
16b	>	HAS CONCEPT MOD	CODE	EV (121050, DCM, "Equivalent Meaning of Concept Name")	4	¥		\$PrecoordinatedMeasurementMeaning
17	>	HAS OBS CONTEXT	INCLUDE	DTID 4108 "Tracking Identifier"	4	¥		
18	>	INFERRED FROM	COMPOSITE	EV (126100, DCM, "Real World Value Map used for measurement")	4	¥		SOP Class UID shall be Real World Value Mapping Storage ("1.2.840.10008.5.1.4.1.1.67")
19	>	HAS CONCEPT MOD	INGLUDE	DTID 4019 "Algorithm Identification"	4	¥		

Content Item Descriptions

Rows 2, 3, 4, 5	The HAS CONCEPT MOD items allow the explicit definition of terms for post-coordination of the measurement concept name. Additional post-coordinated modifier terms may be included in a SOP Instance based on this Template, in accordance with section 6.2.4, or as defined by Templates that invoke this Template and explicitly define additional post-coordinated modifiers (e.g., TID 5203).
Row 5	Finding site may be multiple when a region of interest spans multiple anatomical locations and there is not a single pre-coordinated code describing the combination of locations. E.g., when a maligant, inflammatory or traumatic process spans actual or defined anatomical boundaries. There is no requirement that the multiple locations be contiguous.
Rows 9, 10	The INFERRED FROM items allow the specification (by-value or by-reference) of numeric values that were used in the derivation of the numeric measurement of Row 1. The nature of the inference is not explicitly conveyed; it may be implicit in the Concept Names of the measurements. Inference by-reference is valid only in SOP Classes that permit the INFERRED FROM relationship by-reference.
Row 13	Multiple SCOORD Content Items may be necessary to describe the source of the measurement. E.g., the measurement of an angle between two non-intersecting line segments requires two separate POLYLINE SCOORD Content Items with the concept name of (121223, DCM, "Arm of angle") conveyed in \$Purpose.
Rows 13, 14	(260753009, SCT, "Source") may be specified for \$ImagePurpose or \$WavePurpose as a generic Concept Name when there is a desire to avoid having an anonymous (unnamed) Content Item.

Rows 16, 16b	Equivalent Meaning of Concept Name allows the creating application to specify the preferred composed concept name representing the measurement and the associated post-coordinated concept modifiers. The concept modifiers may include those specified in this Template, in a Template that invokes this Template, or at the option of the creating application in accordance with Section 6.2.4. This composed concept name may be rendered by a display application. It may be supplied as text or coded concept or both.
Row 18	Row 18 is a reference to an RWV that describes how measurements were made in units that differ from the stored pixel values in the images referenced in Row 13. E.g., for a PET SUVbw measurement, the mapping from activity/concentration units in the referenced image that was used (and which may be reused for measurements in the future) may be encoded in a referenced RWV instance. This reference overrides any reference in an including Template (such as for a Measurement Group).

Add new template to DICOM PS3.16 as follows (no changes to what was extracted from TID 300):

TID 30n Measurement Content

This Template provides a general structure for the content of a numeric measurement, together with evaluations of its normality and/or significance, and the inference source(s) for its value.

Table TID 300. Parameters

Parameter Name	Parameter Usage
\$ModType	Modifier Name for Concept Name of measurement
\$ModValue	Modifier Value for Concept Name of measurement
\$Method	Value for Measurement Method
\$Derivation	Value for Measurement Derivation
\$TargetSite	Value(s) for Anatomic Location of measurement
\$TargetSiteLaterality	Laterality Value for Anatomic Location of measurement
\$TargetSiteMod	Modifier Value for Anatomic Location of measurement
\$Equation	Coded term or Context Group for the equation or table from which the measurement was derived or computed
\$ImagePurpose	Purpose of Reference for an image used as a source of the measurement
\$WavePurpose	Purpose of Reference for a waveform used as a source of the measurement
\$RefAuthority	Bibliographic reference or authority for statistical properties of a reference population
\$RangeAuthority	Bibliographic reference or authority for the normal range of the measurement
\$DerivationParameter	Coded term or Context Group for Concept Name of a derivation parameter
\$DerivationParameterUnits	Units of derivation parameter
\$PrecoordinatedMeasurementMeaning	Coded value for the precoordinated concept name of measurement

Type: Extensible Order: Significant Root: No

Table TID 30n. Measurement Content

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
2		HAS CONCEPT MOD	CODE	\$ModType	1-n	U		\$ModValue

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
3		HAS CONCEPT MOD	CODE	EV (370129005, SCT, "Measurement Method")	1	U		\$Method
4		HAS CONCEPT MOD	CODE	EV (121401, DCM, "Derivation")	1	U		\$Derivation
5		HAS CONCEPT MOD	CODE	EV (363698007, SCT, "Finding Site")	1-n	U		\$TargetSite
6	>	HAS CONCEPT MOD	CODE	EV (272741003, SCT, "Laterality")	1	U		\$TargetSiteLaterality Defaults to DCID 244 "Laterality"
7	>	HAS CONCEPT MOD	CODE	DT (106233006, SCT, "Topographical modifier")	1	U		\$TargetSiteMod
8		HAS PROPERTIES	INCLUDE	DTID 310 "Measurement Properties"	1	U		\$RefAuthority = \$RefAuthority \$RangeAuthority = \$RangeAuthority
9		INFERRED FROM	NUM	\$DerivationParameter	1-n	UC	XOR Row 10	UNITS = \$DerivationParameterUnits
10		R-INFERRED FROM	NUM	\$DerivationParameter	1-n	UC	XOR Row 9	UNITS = \$DerivationParameterUnits
11		INFERRED FROM	INCLUDE	DTID 315 "Equation or Table"	1	UC	XOR Row 12	\$Equation = \$Equation
12		INFERRED FROM	TEXT	DCID 228 "Equation or Table"	1	UC	XOR Row 11	
13			INCLUDE	DTID 320 "Image or Spatial Coordinates"	1-n	U		\$Purpose = \$ImagePurpose
14			INCLUDE	DTID 321 "Waveform or Temporal Coordinates"	1-n	U		\$Purpose = \$WavePurpose
15			INCLUDE	DTID 1000 "Quotation"	1	U		
16		HAS CONCEPT MOD	TEXT	EV (121050, DCM, "Equivalent Meaning of Concept Name")	1	U		
16b		HAS CONCEPT MOD	CODE	EV (121050, DCM, "Equivalent Meaning of Concept Name")	1	U		\$PrecoordinatedMeasurementMeaning
17		HAS OBS CONTEXT	INCLUDE	DTID 4108 "Tracking Identifier"	1	U		
18		INFERRED FROM	COMPOSITE	EV (126100, DCM, "Real World Value Map used for measurement")	1	U		SOP Class UID shall be Real World Value Mapping Storage ("1.2.840.10008.5.1.4.1.1.67")
19		HAS CONCEPT MOD	INCLUDE	DTID 4019 "Algorithm Identification"	1	U		

Content Item Descriptions

Rows 2, 3, 4, 5	The HAS CONCEPT MOD items allow the explicit definition of terms for post-coordination of the measurement
	concept name. Additional post-coordinated modifier terms may be included in a SOP Instance based on this Template, in accordance with section 6.2.4, or as defined by Templates that invoke this Template and explicitly define additional post-coordinated modifiers (e.g., TID 5203).
Row 5	Finding site may be multiple when a region of interest spans multiple anatomical locations and there is not a single pre-coordinated code describing the combination of locations. E.g., when a maligant, inflammatory or traumatic process spans actual or defined anatomical boundaries. There is no requirement that the multiple locations be contiguous.
Rows 9, 10	The INFERRED FROM items allow the specification (by-value or by-reference) of numeric values that were used in the derivation of the numeric measurement of Row 1. The nature of the inference is not explicitly conveyed; it may be implicit in the Concept Names of the measurements. Inference by-reference is valid only in SOP Classes that permit the INFERRED FROM relationship by-reference.
Row 13	Multiple SCOORD Content Items may be necessary to describe the source of the measurement. E.g., the measurement of an angle between two non-intersecting line segments requires two separate POLYLINE SCOORD Content Items with the concept name of (121223, DCM, "Arm of angle") conveyed in \$Purpose.
Rows 13, 14	(260753009, SCT, "Source") may be specified for \$ImagePurpose or \$WavePurpose as a generic Concept Name when there is a desire to avoid having an anonymous (unnamed) Content Item.
Rows 16, 16b	Equivalent Meaning of Concept Name allows the creating application to specify the preferred composed concept name representing the measurement and the associated post-coordinated concept modifiers. The concept modifiers may include those specified in this Template, in a Template that invokes this Template, or at the option of the creating application in accordance with Section 6.2.4. This composed concept name may be rendered by a display application. It may be supplied as text or coded concept or both.
Row 18	Row 18 is a reference to an RWV that describes how measurements were made in units that differ from the stored pixel values in the images referenced in Row 13. E.g., for a PET SUVbw measurement, the mapping from activity/concentration units in the referenced image that was used (and which may be reused for measurements in the future) may be encoded in a referenced RWV instance. This reference overrides any reference in an including Template (such as for a Measurement Group).

Amend DICOM PS3.16 as follows (changes to existing text are bold and <u>underlined</u> for additions and struckthrough for removals):

TID 5203 Echo Measurement

Table TID 5203. Parameters

Parameter Name	Parameter Usage
\$Measurement	Coded term or Context Group for Concept Name of measurement
\$Method	Value for Measurement Method

Type: Extensible Order: Significant Root: No

Table TID 5203. Echo Measurement

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			INGLUDE NUM	DTID 300 "Measurement" SMeasurement	1	M		\$Measurement = \$Measurement \$Method = \$Method \$TargetSite = BCID 12236 "Echocardiography Anatomic Site" \$TargetSiteMod = BCID 12237 "Echocardiography Anatomic Site Modifier"
<u>1b</u>	>		INCLUDE	DTID 30n "Measurement Content"	1	M		\$Method = \$Method \$TargetSite = BCID 12236 "Echocardiography Anatomic Site" \$TargetSiteMod = BCID 12237 "Echocardiography Anatomic Site Modifier"
2	>	HAS CONCEPT MOD	CODE	EV (260674002, SCT, "Flow Direction")	1	U		BCID 12221 "Flow Direction"
3	>	HAS CONCEPT MOD	CODE	EV (272517003, SCT, "Respiratory Cycle Point")	1	U		DCID 12234 "Respiration State"
4	>	HAS CONCEPT MOD	CODE	EV (272518008, SCT, "Cardiac Cycle Point")	1	U		DCID 12233 "Cardiac Phase"
5	>	HAS ACQ CONTEXT	CODE	EV (399264008, SCT, "Image Mode")	1	U		DCID 12224 "Ultrasound Image Mode"
6	>	HAS ACQ CONTEXT	CODE	EV (111031, DCM, "Image View")	1	U		BCID 12226 "Echocardiography Image View"
7	>	HAS ACQ CONTEXT	CODE	EV (18139-6, LN, "Stage")	1	U		BCID 12002 "Ultrasound Protocol Stage Type"

Content Item Descriptions

Row 1	TID 300 specifies an "Equivalent Meaning of Concept Name" that allows the creating application to specify the
	preferred composed concept name representing the measurement and the associated post-coordination Concept
	Modifiers (e.g., the ASE terminology described in Section N.3 "Illustrative Mapping to ASE Concepts" in PS3.17).

TID 5223 Pediatric, Fetal and Congenital Cardiac Ultrasound Measurement

This Template provides for the post-coordination of a measurement with a variety of concept modifiers and acquisition context observations. When invoked from TID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section", the measurement concept is implicitly post-coordinated with the concept modifiers of the Measurement Group (TID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section" Rows 5 and 6), and with the Finding Site of the report section (TID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section" Row 2). The finding site may be further specified within this Template by the Target Site and Target Site Modifiers (CID 12280 "Cardiac Ultrasound Target Site" and CID 12281 "Cardiac Ultrasound Target Site Modifier").

The implicit finding site inherited from TID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section" can be made explicit by using the same finding site concept in the Target Site (the measurement concept modifier), rather than a term from CID 12280 "Cardiac Ultrasound Target Site". This explicit post-coordination allows the use of one of the modifiers of CID 12281 "Cardiac Ultrasound Target Site Modifier" to that finding site, as the Target Site Modifier requires an explicit Target Site in the measurement structure (TID

300 "Measurement" Rows 5 and 7). In fact, any child concept of the finding site in the SNOMED hierarchy may be used as the measurement Target Site.

The finding or target site may be identified by a concept from the SNOMED "clinical finding" or "morphological anomaly" hierarchies (e.g., (70142008, SCT, "Atrial Septal defect"), or (41699000, SCT, "Effusion"), rather than the "anatomical structure" hierarchy. In this case, the meaning is inferred as "the anatomic location of the clinical finding or morphological anomaly, within the constraints of other implicit or explicit post-coordinated finding site concepts."

Note

Thus when TID 5221 "Cardiac Ultrasound Pediatric Echo Measurement Section" Row 14 invokes TID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section" with the section finding site concept (76848001, SCT, "Pericardium"), and TID 5223 "Pediatric, Fetal and Congenital Cardiac Ultrasound Measurement" Row 1 applies the target site (41699000, SCT, "Effusion"), the effective finding site is "pericardial effusion".

Table TID 5223. Parameters

Parameter Name	Parameter Usage
\$Measurement	Coded term or Context Group for Concept Name of measurement
\$Method	Value for Measurement Method

Type: **Extensible** Order: Significant Root: No

Table TID 5223. Pediatric, Fetal and Congenital Cardiac Ultrasound Measurement

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			INGLUDE NUM	DTID 300 "Measurement" \$Measurement	1	M		\$Measurement = \$Measurement \$Method = \$Method \$TargetSite = BCID 12280 "Gardiac Ultrasound Target Site" \$TargetSiteMod = BCID 12281 "Cardiac Ultrasound Target Site Modifier" \$Derivation = DCID 3838 "Diameter Derivation"
<u>1b</u>	>		INCLUDE	DTID 30n "Measurement Content"	1	M		\$Method = \$Method \$TargetSite = BCID 12280 "Cardiac Ultrasound Target Site" \$TargetSiteMod = BCID 12281 "Cardiac Ultrasound Target Site Modifier" \$Derivation = DCID 3838 "Diameter Derivation"
2	>	HAS CONCEPT MOD	CODE	EV (121425, DCM, "Index")	1	U		DCID 3455 "Index Method"

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
3	>	HAS CONCEPT MOD	CODE	EV (260674002, SCT, "Flow Direction")	1	U		BCID 12221 "Flow Direction"
4	>	HAS CONCEPT MOD	CODE	EV (272517003, SCT, "Respiratory Cycle Point")	1	U		DCID 12234 "Respiration State"
5	>	HAS CONCEPT MOD	CODE	EV (272518008, SCT, "Cardiac Cycle Point")	1	U		DCID 12233 "Cardiac Phase"
6	>	HAS ACQ CONTEXT	CODE	EV (399264008, SCT, "Image Mode")	1	U		DCID 12224 "Ultrasound Image Mode"
7	>	HAS ACQ CONTEXT	CODE	EV (111031, DCM, "Image View")	1	U		BCID 12226 "Echocardiography Image View"

Content Item Descriptions

	For an index type of measurement, the concept name of this Row 1 will still be the original measurement conc name; it is Row 2 that gives the indication that Row 1 is actually an index type of measurement. When this happed the measurement value of Row 1 should be a value after being indexed and the measurement unit of Row 1 should be an index type of unit.					
	For example, to insert a "Stroke Volume Index" measurement to this SR object, the concept name of Row 1 will be "Stroke Volume", its numerical value will be the calculation result of "Stroke Volume /BSA" and its units are "ml/cm2".					
Row 2	When this row is available, the Row 1 is an index calculation of the object.					

For reference unchanged, an example of a correct invocation of TID 300 that is not followed by implicit inclusion of child rows of the invoked template container:

TID 1501 Measurement and Qualitative Evaluation Group

Table TID 1501. Measurement and Qualitative Evaluation Group

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CONTAINS		EV (125007, DCM, "Measurement Group")	1	М		
9d	>	CONTAINS		EV (130401, DCM, "Visual explanation")	1-n	U		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
10	>	CONTAINS	INCLUDE	DTID 300 "Measurement"	1-n	U		\$Measurement = \$Measurement
								\$Units = \$Units
								\$ModType = \$ModType
								\$ModValue = \$ModValue
								\$Method = \$Method
								\$Derivation = \$Derivation
								\$TargetSite = \$TargetSite
								\$TargetSiteMod = \$TargetSiteMod
								\$Equation = \$Equation
								\$ImagePurpose = \$ImagePurpose
								\$WavePurpose = \$WavePurpose
								\$RefAuthority = \$RefAuthority
								\$RangeAuthority = \$RangeAuthority
								\$DerivationParameter = \$DerivationParameter
								\$DerivationParameterUnits = \$DerivationParameterUnits
10b	>	CONTAINS	IMAGE	\$ImagePurpose	1-n	U		

For reference unchanged, hyperlink targets:

6.2.4 Post-coordinated Codes and Has Concept Modifier Relationship 1 **TID 310 Measurement Properties TID 315 Equation or Table TID 320 Image or Spatial Coordinates TID 321 Waveform or Temporal Coordinates** TID 1000 Quotation TID 4019 Algorithm Identification 7 **TID 4108 Tracking Identifier** TID 5221 Cardiac Ultrasound Pediatric Echo Measurement Section TID 5222 Pediatric, Fetal and Congenital Cardiac Ultrasound Section 10 CID 228 Equation or Table CID 244 Laterality CID 3838 Diameter Derivation CID 3455 Index Method CID 12002 Ultrasound Protocol Stage Type 15 CID 12221 Flow Direction 16 CID 12224 Ultrasound Image Mode CID 12226 Echocardiography Image View 18 CID 12233 Cardiac Phase 19 **CID 12234 Respiration State** 20 CID 12236 Echocardiography Anatomic Site

CID 12237 Echocardiography Anatomic Site Modifier

CID 12281 Cardiac Ultrasound Target Site Modifier

CID 12280 Cardiac Ultrasound Target Site