

DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2017/06/05
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Correction Number	CP-1750
Log Summary:	Change the defined term for Modality to reflect the object type for En face Image and B-scan Volume Analysis
Name of Standard	PS3.3 2018b
Rationale for Correction:	<p>The definition for the attribute Modality is “Type of equipment that originally acquired the data used to create the images in this Series.” So typical enumerated values are CT, MR, OP, OCT, etc. However, for certain types of IODs the enumerated values were NOT set to values based on the type of equipment but the type of IOD, such as SR, PR, RTDOSE, SEG, KO and more.</p> <p>For example, when a CT modality system creates a SR SOP Instance, the value for Modality is SR, not CT. That does not follow the strict definition of Modality but it is very useful as it makes it straight forward systems to perform Query/Retrieve, etc.</p> <p>The main reason why this helps Q/R and display to the users is that the Attribute Modality is the ONLY required attribute at the series level which helps identify the type of SOP Instance without the need to query at the IMAGE level (yes it does not identify the actual SOP Instance). Even if we do query at the IMAGE level, other fields which may help identify the type of IOD are optional (such as SOP Class UID, SOP Classes in Study etc.). So systems use the field Modality to identify the type of IOD for both Q/R and display. Systems cannot rely on the optional fields. For example, if the En face images had a different Modality value than OPT, systems could recognize that fact and retrieve those images only. The En face images are the key images for clinicians and what they wish to see.</p> <p>In order for systems to properly implement OCT-A, they must understand, process and display multiple types of IODs, i.e., OPT, OCT B-Scan Volume, En face, Surface Segmentation.</p> <p>The current enumerated value for the modality attribute in OCT En Face and OCT B-scan Volume Analysis is set to OPT and this choice makes it extremely difficult to manage the diverse IODs. WG9 believes this choice causes great difficulty for systems, as they cannot reliably implement Q/R plus provide a display to the user so that they can understand the type of SOP Instances that are available. It also negatively affects performance and efficiency, as many display systems would wish to only pull the En face images and not the other (bulky) objects.</p> <p>So WG9 proposes to change the Modality enumerated value for OCT En Face to OPTENF and the OCT B-scan Volume Analysis to OPTBSV. This choice will greatly improve interoperability for Q/R and display the same way it has been accomplished for SR, KO, SEG, PR and more.</p> <p>Please note: This was the original choice that passed letter ballot but was changed in FT review. Also, WG9 has canvassed vendors and these new SOP Classes have yet to be implemented, so making such a change now will not affect current implementations. If WG 6 is concerned about this point, we suggest retiring the original En Face and B-scan and creating a new SOP Class UID. Since there have not been implementations it will not cause a problem.</p>

Correction Wording:

Modify PS3.3 Table A.1-1 to delete OPT Series and add specific IOD Series OCT En Face Image and OCT B-scan Volume Analysis. Also change the name OCTBS to OCTBSV

IODs Modules	...	OCT ENF	OCT BSV
Patient		M	M
Clinical Trial Subject		U	U
General Study		M	M
Patient Study		U	U
Clinical Trial Study		U	U
General Series		M	M
Clinical Trial Series		U	U
Segmentation Series			
Whole Slide Microscopy Series			
Intravascular OCT Series			
Ophthalmic Thickness Map Series			
Corneal Topography Map Series			
Ophthalmic Tomography Series		M	M
<u>Ophthalmic Tomography En Face Series</u>		<u>M</u>	
<u>Ophthalmic Tomography B- scan Volume Analysis Series</u>			<u>M</u>
Frame of Reference		M	M
Synchronization			
Cardiac Synchronization			

General Equipment		M	M
Enhanced General Equipment		M	M
General Image		M	
Image Pixel		M	M
Palette Color Lookup Table		C	
Supplemental Palette Color Lookup Table			
Enhanced Contrast/Bolus			
Cine			
Multi-frame			
Multi-frame Functional Groups			M
Multi-frame Dimension			M
Bitmap Display Shutter			
Device			
Specimen			
VL Image			
Slide Coordinates			
Whole Slide Microscopy Image			
Optical Path			
Multi-Resolution Navigation			
Slide Label			
Ophthalmic Photography Image			
Wide Field Ophthalmic Photography Stereographic Projection			
Wide Field Ophthalmic Photography 3D Coordinates			
Wide Field Ophthalmic Photography Quality Rating			
Ocular Region		M	

Imaged			
Ophthalmic Photography Acquisition Parameters			
Ophthalmic Photographic Parameters			
Ophthalmic Tomography Image			
Ophthalmic Tomography Parameters			
Ophthalmic Tomography Acquisition Parameters			
Ophthalmic Thickness Map			
Ophthalmic Thickness Map Quality Rating			
Corneal Topography Map Image			
Corneal Topography Map Analysis			
Intravascular OCT Image			
Intravascular OCT Acquisition Parameters			
Intravascular OCT Processing Parameters			
Intravascular Image Acquisition Parameters			
<u>Ophthalmic OCT En Face Image</u>		M	
<u>Ophthalmic OCT B-scan Volume Analysis Image</u>			M
<u>Ophthalmic OCT En Face Image Quality Rating</u>		C	
Segmentation Image			
Overlay Plane			
Common Instance		U	U

Reference			
Acquisition Context			
ICC Profile		U	
SOP Common		M	M
Frame Extraction			C

Modify PS3.3 Table A.83-1. to delete OPT Series and add OCT En Face Series

A.83.3 Ophthalmic Optical Coherence Tomography En Face Image IOD Modules

[Table A.83-1](#) specifies the Modules of the Ophthalmic Optical Coherence Tomography En Face Image IOD.

Table A.83-1. Ophthalmic Optical Coherence Tomography En Face Image IOD Modules

IE	Module	Reference	Usage
Patient	Patient	C.7.1.1	M
	Clinical Trial Subject	C.7.1.3	U
Study	General Study	C.7.2.1	M
	Patient Study	C.7.2.2	U
	Clinical Trial Study	C.7.2.3	U
Series	General Series	C.7.3.1	M
	Ophthalmic Tomography En Face Series	C.8.17.6 C.8.17.x	M
	Clinical Trial Series	C.7.3.2	U
Frame of Reference	Frame of Reference	C.7.4.1	M
Equipment	General Equipment	C.7.5.1	M
	Enhanced General Equipment	C.7.5.2	M
Image	General Image	C.7.6.1	M

IE	Module	Reference	Usage
	Image Pixel	C.7.6.3	M
	Palette Color Lookup Table	C.7.9	C - Required if Photometric Interpretation (0028,0004) has a value of PALETTE COLOR
	Ophthalmic Optical Coherence Tomography En Face Image	C.8.17.14	M
	Ocular Region Imaged	C.8.17.5	M
	Ophthalmic Optical Coherence Tomography En Face Image Quality Rating	C.8.17.15	C - Required if device calculates quality rating
	ICC Profile	C.11.15	U
	SOP Common	C.12.1	M
	Common Instance Reference	C.12.2	U

Modify PS3.3 Table A.84-1. to delete OPT Series and add OCT B-scan Volume Analysis Series

A.84.3 Ophthalmic Optical Coherence Tomography B-scan Volume Analysis IOD Modules

[Table A.84-1](#) specifies the Modules of the Ophthalmic Optical Coherence Tomography B-scan Volume Analysis IOD.

Table A.84-1. Ophthalmic Optical Coherence Tomography B-scan Volume Analysis IOD Modules

IE	Module	Reference	Usage
Patient	Patient	C.7.1.1	M
	Clinical Trial Subject	C.7.1.3	U
Study	General Study	C.7.2.1	M
	Patient Study	C.7.2.2	U

IE	Module	Reference	Usage
	Clinical Trial Study	C.7.2.3	U
Series	General Series	C.7.3.1	M
	Ophthalmic Tomography B-scan Volume Analysis Series	C.8.17.6 C.8.17.y	M
	Clinical Trial Series	C.7.3.2	U
Frame of Reference	Frame of Reference	C.7.4.1	M
Equipment	General Equipment	C.7.5.1	M

Add PS3.3 Table C.8.17.x to add OCT En Face Series

C.8.17.x Ophthalmic Tomography En Face Series Module

Table C.8.17.x-1 specifies the Attributes that identify and describe general information about the Ophthalmic Tomography En Face Series.

Table C.8.17.x-1. Ophthalmic Tomography En FaceSeries Module Attributes

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Type of equipment that originally acquired the data used to create the images in this Series. Enumerated Values: OPTENF See Section C.7.3.1.1.1 for further explanation.
Series Number	(0020,0011)	1	A number that identifies this Series.
Referenced Performed Procedure Step Sequence	(0008,1111)	1C	Uniquely identifies the Performed Procedure Step SOP Instance to which the Series is related. Only a single Item shall be included in this Sequence. Required if a Performed Procedure Step SOP Class was involved in the creation of this Series.
>Include Table 10-11 “SOP Instance Reference Macro Attributes”			

Add PS3.3 Table C.8.17.y to add OCT B-scan Volume Analysis Series

C.8.17.x Ophthalmic Tomography B-scan Volume Analysis Series Module

Table C.8.17.x-1 specifies the Attributes that identify and describe general information about the Ophthalmic Tomography B-scan Volume Analysis Series.

Table C.8.17.x-1. Ophthalmic Tomography B-scan Volume Analysis Series Module Attributes

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Type of equipment that originally acquired the data used to create the images in this Series. Enumerated Values: OPTBSV See Section C.7.3.1.1.1 for further explanation.
Series Number	(0020,0011)	1	A number that identifies this Series.
Referenced Performed Procedure Step Sequence	(0008,1111)	1C	Uniquely identifies the Performed Procedure Step SOP Instance to which the Series is related. Only a single Item shall be included in this Sequence. Required if a Performed Procedure Step SOP Class was involved in the creation of this Series.
>Include Table 10-11 “SOP Instance Reference Macro Attributes”			

Modify PS3.3 to update Modality Defined Terms

Defined Terms:

OPTENF Ophthalmic En face

OPTBSV Ophthalmic Tomography B-scan Volume Analysis