



IHE Eye Care: Ophthalmic Devices and DICOM IODs

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Learning Objectives

- How to categorize ophthalmic devices
- Mapping to/from DICOM modality codes
- What DICOM IOD's to use

Goal:

Help you understand what is needed to adapt software products to IHE Eye Care

Ophthalmic Device Types

an informal list

- Lensometer
- Autorefractor / Keratometer
- Pachymeter
- Autophoropter
- Ultrasound B-Scan
- Ultrasound A-Scan Biometer
- Optical A-Scan Biometer
- Endothelial Camera
- Operating Microscope
- Digital Slit Lamp
- Digital Fundus Camera
- Visual Field Analyzer
- OCT
- Scheimpflug Camera
- Corneal Topographer
- Wavefront Analyzer
- *GDx*
- *HRT*

Modality Codes – CID 29

US	Ultrasound
<i>OCT</i>	<i>Optical Coherence Tomography (superceded)</i>
OPM	Ophthalmic Mapping
OP	Ophthalmic Photography
<i>OPR</i>	<i>Ophthalmic Refraction (retired)</i>
OPT	Ophthalmic Tomography
OPV	Ophthalmic Visual Field
<u>AR</u>	<u>Autorefraction</u>
<u>KER</u>	<u>Keratometry</u>
<u>LEN</u>	<u>Lensometry</u>
<u>SRF</u>	<u>Subjective Refraction</u>
<u>VA</u>	<u>Visual Acuity</u>

Acquisition Device Type

CID 4202

Attribute (0022,0015) in OP parameters module

R-1021A	Fundus Camera
A-2B201	Biomicroscope
R-1021B	External Camera
R-1021C	Specular Microscope
A-2B210	Operating Microscope
A-00E8A	Scanning Laser Ophthalmoscope
R-1021D	Indirect Ophthalmoscope
R-1021E	Direct Ophthalmoscope
R-1021F	Ophthalmic Endoscope
A-00FCA	Keratoscope

Acquisition Device Type CID 4210

Attribute (0022,0015) in OPT parameters module

<u>A-00FBE</u>	<u>Optical Coherence Tomography Scanner</u>
<u>R-FAB5A</u>	<u>Retinal Thickness Analyzer</u>
<u>A-00E8B</u>	<u>Confocal Scanning Laser Ophthalmoscope</u>
<u>111626</u>	<u>Scheimpflug Camera</u>

IHE Eye Care SOP Classes

Ophthalmic Images

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.6.1	Ultrasound Image Storage
1.2.840.10008.5.1.4.1.1.3.1	Ultrasound Multi-frame Image Storage
1.2.840.10008.5.1.4.1.1.77.1.5.1	Ophthalmic 8 bit Photography Image Storage
1.2.840.10008.5.1.4.1.1.77.1.5.2	Ophthalmic 16 bit Photography Image Storage
1.2.840.10008.5.1.4.1.1.88.33	Stereometric Relationship Storage
1.2.840.10008.5.1.4.1.1.77.1.5.4	Ophthalmic Tomography Image Storage

Stereometric Relationships

The stereometric relationship module is used to identify pairs of images that may be viewed in stereo. It is possible that the same image or frame may be a member of multiple pairs. The images forming a pair shall be in different SOP Instances. The images forming a pair can be in different Series. All instances referenced in this Module shall be in the same Study as the Instance in which the Module occurs.

IHE Eye Care SOP Classes

Radiological Images

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.1	Computed Radiography Image Storage
1.2.840.10008.5.1.4.1.1.1.1	Digital X-Ray Image Storage – For Presentation
1.2.840.10008.5.1.4.1.1.2	CT Image Storage
1.2.840.10008.5.1.4.1.1.4	MR Image Storage
1.2.840.10008.5.1.4.1.1.12.1	X-Ray Angiographic Image Storage
1.2.840.10008.5.1.4.1.1.7	Secondary Capture Image Storage

IHE Eye Care SOP Classes Evidence Documents

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.104.1	Encapsulated PDF Storage

The PDF contents of the DICOM Encapsulate PDF objects shall conform to PDF/A-1a

IHE Eye Care SOP Classes

Refractive Measurements

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.78.1	Lensometry Measurements
1.2.840.10008.5.1.4.1.1.78.2	Autorefraction Measurements
1.2.840.10008.5.1.4.1.1.78.3	Keratometry Measurements
1.2.840.10008.5.1.4.1.1.78.4	Subjective Refraction Measurements
1.2.840.10008.5.1.4.1.1.78.5	Visual Acuity Measurements
1.2.840.10008.5.1.4.1.1.78.6	Spectacle Prescription Report

Summary

putting it all together...

Informal Device Type	SOP Classes	Modality	Acquisition Device Type Code
Lensometer	Lensometry Measurements	LEN	NA
Autorefractor / Keratometer	Autorefraction Measurements	AR	NA
	Keratometry Measurements	KER	NA
Pachymeter	Encapsulated PDF Storage	OT	NA
Auto Phoropter	Subjective Refraction Measurements	SRF	NA
	Visual Acuity Measurements	VA	NA
Ultrasound B-Scan	Ultrasound Image Storage	US	NA
Ultrasound A-Scan Biometer	Encapsulated PDF Storage	OT	NA
Optical A-Scan Biometer	Encapsulated PDF Storage	OT	NA
Endothelial Camera	Ophthalmic Photography Image Storage	OP	Specular Microscope
Operating Microscope	Ophthalmic Photography Image Storage	OP	Operating Microscope
	Stereometric Relationship Storage	SMR	NA

Summary

putting it all together...

Informal Device Type	SOP Classes	Modality	Acquisition Device Type Code
Operating Microscope	Ophthalmic Photography Image Storage	OP	Operating Microscope
	Stereometric Relationship Storage	SMR	NA
Digital Slit Lamp	Ophthalmic Photography Image Storage	OP	External Camera
Digital Fundus Camera	Ophthalmic Photography Image Storage	OP	Fundus Camera
	Stereometric Relationship Storage	SMR	NA
Visual Field Analyzer	Encapsulated PDF Storage	OPV	NA
OCT	Ophthalmic Tomography Image Storage	OPT	Optical Coherence Tomography Scanner
	Encapsulated PDF Storage	OPT	NA
Scheimpflug Camera	Ophthalmic Tomography Image Storage	OPT	Scheimpflug Camera
	Encapsulated PDF Storage	OPT	NA
Corneal Topographer	Encapsulated PDF Storage	OPM	NA
Wavefront Analyzer	Encapsulated PDF Storage	OPM	NA
<i>GDX</i>	Encapsulated PDF Storage	OPM	NA
<i>HRT</i>	Ophthalmic Tomography Image Storage	OPT	Confocal Scanning Laser Ophthalmoscope
	Encapsulated PDF Storage	OPT	NA