



BSI Standards Publication

Health informatics — Ophthalmic examination device data

Part 1: General examination devices

National foreword

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Health informatics — Ophthalmic examination device data —

Part 1: General examination devices

*Informatique de santé — Données relatives aux dispositifs d'examen
ophtalmique —*

Partie 1: Dispositifs pour les examens généraux





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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 215, *Health informatics*.

A list of all parts in the ISO 22218 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Ophthalmic devices are used in hospitals and clinics to conduct examinations for patients. The primary devices used in these ophthalmic examinations provide measurement of refraction, corneal curvature, intraocular pressure, lens power and visual acuity. Almost all patients who consult for a diagnosis in ophthalmology undergo these examinations. Most ophthalmic hospitals and clinics use devices in these examinations to provide the needed measurements. Since many different vendors supply the devices to perform these measurements, the interoperability of examination results is important. In addition, standard procedures for mutually communicating these measurements are required between the ophthalmic examination devices and the Ophthalmic Information System (OIS).

These examinations are indispensable not only for ophthalmic medical care but also for prescriptions for spectacles and contact lenses. Additionally, intraocular pressure measurement is important for other ophthalmic procedures such as glaucoma assessment.

However, due to the differing data formats provided by these ophthalmic examination devices and the lack of interoperability, integration of this information is difficult and potentially error prone. Integration of each device's information into an OIS or hospital information system (HIS) therefore requires significant individual effort for each manufacturer's device.

This document specifies the content and format for ophthalmic examination device measurements, identifying that information that may be included in examination reports, as well as how it should be formatted when communicated to an OIS, HIS or other similar system.

Health informatics — Ophthalmic examination device data —

Part 1: General examination devices

1 Scope

This document specifies the measurement data output formats for devices used in general ophthalmic examinations, including the following modalities:

- Refractometer (REF) Refraction
- Keratometer (KM) Corneal curvature
- Tonometer (TM) Intraocular pressure
- Lensmeter (LM) Spectacle lens power
- Phoropter (PHOR) Visual acuity

This document only addresses text-based device reporting of ophthalmic examination device data (OEDD). Images generated as needed during an ophthalmic examination are outside the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

refractometer

device that measures the refractive state of the eye

Note 1 to entry: Measuring the refractive state of the eye is necessary to determine the refractive power of a correction lens to restore normal vision.

Note 2 to entry: Measuring devices can provide both analog or digital readouts.

3.2
intraocular pressure
IOP

measurement of the fluid pressure inside the eye

Note 1 to entry: This measurement is typically expressed in kPa; however, some devices also provide it in mmHg.
1 mmHg = 0,133 3 kPa

3.3
measured intraocular pressure
measured IOP

intraocular pressure that obtained without any compensation

Note 1 to entry: See *corrected intraocular pressure* (3.4).

3.4
corrected intraocular pressure
corrected IOP

intraocular pressure that results from compensation of the corneal thickness based on the measured intraocular pressure

3.5
refractive power

ability of a lens or optical surface to change the curvature of incident wavefront or its direction by refraction

3.6
interpupillary distance
PD

distance between the centres of the pupils when the eyes are fixating an object at an infinite distance in the straight-ahead position

3.7
corneal curvature

radius of curvature of the anterior cornea

Note 1 to entry: It is expressed in mm.

3.8
visual acuity

number characterizing the ability of the visual system to recognize optotypes

[SOURCE: ISO 8596:2017, 3.3]

3.9
sphere
spherical power

sph

S

value of the back vertex power of a spherical-power lens or the vertex power in one of the two principal meridians of an astigmatic-power lens, depending on the principal meridian chosen for reference

[SOURCE: ISO 13666:2019, 3.12.2]

3.10
cylindrical power
cylinder

cyl

plus or minus the astigmatic difference, depending on the principal meridian chosen for reference

Note 1 to entry: The commonly used symbol for cylindrical power is *C*.

[SOURCE: ISO 13666:2019, 3.13.7, modified — Note 1 to entry modified.]

3.11

Maddox

type of ophthalmic examination that uses a Maddox rod

Note 1 to entry: A point source through a small Maddox rod (filter with thin cylindrical red glasses lined up) forms a vertical red line when round glasses horizontally stand in a line, and forms a horizontal red line when round glasses stand vertically in a line. For this property, a Maddox tangent scale (scale with a cruciform scale and a point source at the center) is used to measure a heterophoria angle. By using a small Maddox rod horizontally (vertically) and viewing a tangent scale, a vertical (horizontal) red line can be seen with each eye. By seeing a point source at the center, a red line can be seen at the off-center position with the fellow eye. Measurement is performed by reading the horizontal (vertical) scale of the position.

3.12

accommodation

type of repeated measurement that is performed using the time required for focusing on a visual target

Note 1 to entry: This measurement reveals the nature of accommodation disorder by classifying the appearance of accommodation time into several types as contraction time, that is the time required for focusing on a near visual target, or relaxation time for the time required for focusing on a far visual target.

3.13

AC/A ratio

ratio of the accommodative convergence amount for +1,0D and the accommodation stimulation

Note 1 to entry: This is determined using a fusion test.

3.14

vergence

simultaneous movement of both eyes in different directions

Note 1 to entry: This occurs when the line of sight is moved to objects at different distances (depths) from a viewer. The movement of both eyes directed inward when one looks into the close distance is called “convergence”, and the movement of both eyes directed outward when one looks into the far distance is called “divergence”.

Note 2 to entry: Vergence is one of disconjugate eye movement of right and left eyeballs in the opposite directions, which is different from conjugate eye movement in which both eyes move in the same direction such as saccade and pursuit eye movement. In addition, the word “vergence” is commonly used for eye movement in a horizontal direction; however, besides this, vertical vergence and cyclovergence are included. The convergence divergence movement changes this convergence angle. The simultaneous movement of both eyes in opposite directions occurs when the line of sight is moved to objects at different depths; the convergence movement occurs when one looks into the close distance from the far distance; and on the contrary, the divergence movement occurs when one looks into the far distance from the close distance.

3.15

stereopsis

ability to use sensory information from both eyes to recognize three dimensional shapes stereoscopically

Note 1 to entry: This occurs when a planar image projected on the retina is subjected to integrative action in the visual areas of the cerebral cortex, and is recognized as a three-dimensional shape in three dimensional space.

3.16

depth perception

ability to recognize the difference in distance to multiple targets

3.17

phoria

state where the ocular position during the binocular vision test is normal; however, ocular displacement, infravergeance or supervergeance, appears as fusion disturbance

3.18

aniseikonia

condition in which one eye perceives an image to be larger compared to the other eye and can occur in a horizontal or vertical direction

3.19

ophthalmic information system

OIS

computer system that acquires, stores, retrieves and manages ophthalmic images and examination data

Note 1 to entry: The OIS gather and manage examination information from various ophthalmic devices and submit persistent examination reports in CDA RMIM format to HIS.

3.20

deviceCDA

subset of the CDA RMIM dataset that only includes the information contained in a device

Note 1 to entry: Most ophthalmic examination devices do not support all the mandatory information required by a complete CDA document, such as patient or operator identification. Additional information can be associated after the report is sent to an OIS or HIS. For additional details, see [Clause 4](#).

3.21

hospital information system

HIS

comprehensive, integrated information system designed to manage all the aspects of a hospital's operation

Note 1 to entry: In many implementations, a HIS covers hospital's operation such as medical, administrative, financial, and legal issues and the corresponding processing of services.

[SOURCE: IS4H-MM^[11]]

3.22

optotype

variable-sized type used in testing visual acuity

4 Specifications

4.1 General

OEDD provides standards both for transferring clinical ophthalmic examination data from various types of examination devices to an OIS, as well as submitting persistent reports based on those examination data from an OIS to an HIS.

Exemplary use cases are detailed in [Annex A](#)

It is possible to handle multiple data types such as REF, kerato, IOP, and lens meter within one XML file. It is acceptable to compile REF, kerato, IOP, and lens meter in one file or separate them into different files. Within the file, <ClinicalDocument> is the top tag in accordance with the rules for CDA.

For details, refer to [4.3](#).

The standard codes used in this document are shown in [Annex C](#), and sample XML files are shown in [Annex D](#).

4.2 deviceCDA and persistent examination reports

Most OEDD devices only output examination data and related information, and cannot provide additional data items such as Patient, Operator, Custodian and Authentication.

For such devices, OEDD introduces deviceCDA, a strict subset of CDA, that allows devices to transfer examination data and related information as a deviceCDA dataset without the additional detailed patient identification information that is required in complete CDA documents.

OIS plays the role of receiving examination data and related information as a deviceCDA dataset from a device, and then submitting a persistent examination report to an HIS with additional information required for the complete CDA dataset.

deviceCDA is not a complete CDA dataset but still conforms to the same syntax. OIS therefore prepares a complete OEDD that includes the CDA RMIM dataset with information such as Patient, Operator, Custodian and Authentication, and inserts the deviceCDA dataset received from the device into the OEDD. See [Figure 1](#).

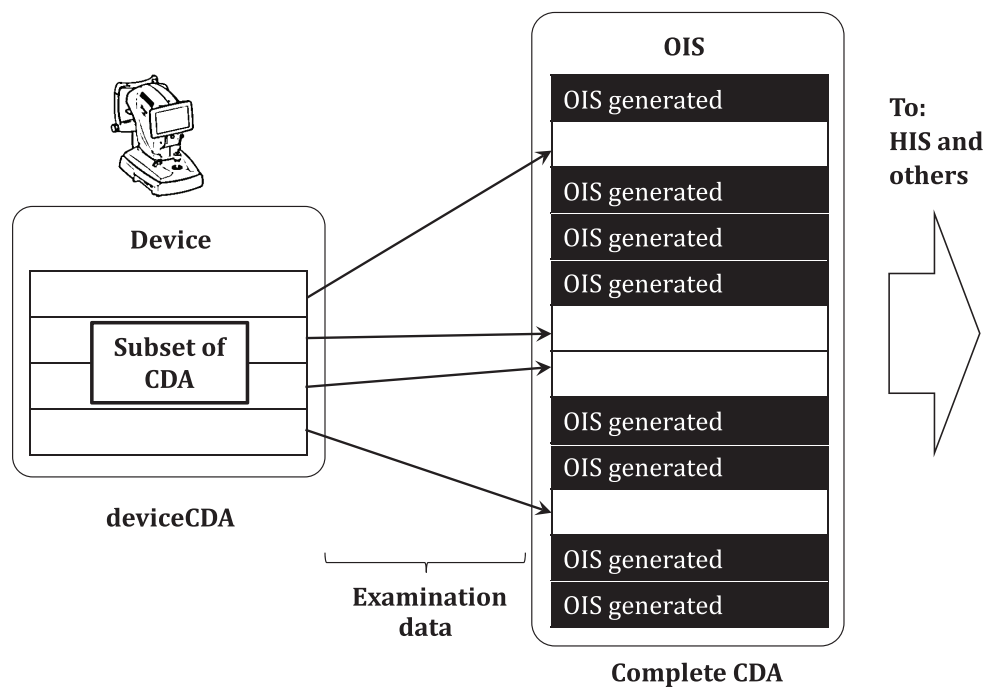


Figure 1 — Concept of a deviceCDA

4.3 Data classification constitution in the file

Both a deviceCDA and a complete CDA file has <ClinicalDocument> and <code code="78513-9"> as the top tag.

It is possible to collect information from all the OEDD classifications into one file, or they can be separated into different deviceCDA/Complete CDA files. In the case of a single composite OEDD deviceCDA/Complete CDA document, the data tags that are common across the devices shall be specified once, and the OEDD data tags integrated separately. See [Table 1](#).

When encountering a data classification not included in the OEDD specification (e.g., private extensions), in which case, implementations shall ignore non-recognized data classifications and process the known data classifications accordingly.

Table 1 — Example deviceCDA file data block layouts

Common Data <ClinicalDocument> <code code="78513-9">	Common Data <ClinicalDocument> <code code="78513-9">	Common Data <ClinicalDocument> <code code="78513-9">	Common Data <ClinicalDocument> <code code="78513-9">
REF Data <component> <structuredBody> <component> <section> <code code="79898-3">	REF Data <component> <structuredBody> <component> <section> <code code="79898-3">	TM Data <component> <structuredBody> <component> <section> <code code="79896-7">	LM Data <component> <structuredBody> <component> <section> <code code="95318-2">
KR Data <component> <structuredBody> <component> <section> <code code="95298-6">	LM Data <component> <structuredBody> <component> <section> <code code="95318-2">	KR Data <component> <structuredBody> <component> <section> <code code="95298-6">	
TM Data <component> <structuredBody> <component> <section> <code code="79896-7">	PHOR Data <component> <structuredBody> <component> <section> <code code="79895-9">		
LM Data <component> <structuredBody> <component> <section> <code code="95318-2">			
File 1	File 2	File 3	File 4

4.4 OEDD structure

4.4.1 General

This document is compliant with CDA-R2. For this reason, the complete detailed file structure can be reviewed in HL7 CDA®¹⁾ Release 2.

In this document, only descriptions particular to ophthalmology are included.

1) HL7 CDA is the registered trademark of Health Level Seven International. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product name.

4.4.2 Data classifications

The data classifications of refractometer, keratometer, tonometer and such are maintained as attribute value (type) of <code> tags.

4.4.3 Attribute value and classification

[Table 2](#) shows ophthalmic examination device data classification values.

Table 2 — OEDD Device Classification Values

Attribute value (code)	Data classification
79898-3	Refractometer data
95298-6	Keratometer data
79896-7	Tonometer data
95318-2	Lensmeter data
79895-9	Auto Phoropter data

[Figure 2](#) shows the examples with refractometer (REF), keratometer (KM), tonometer (TM), lensmeter (LM) and phoropter (PHOR) data. These examinations are designated using LOINC^{®2)} codes.

```

<---Refractometer data--->
<code code="79898-3" displayName="REF" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>
<---Keratometer data--->
<code code="95298-6" displayName="KM" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>
<---Tonometer data--->
<code code="79896-7" displayName="TM" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>
<---Lensmeter data--->
<code code="95318-2" displayName="LM" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>
<---Auto Phoropter data--->
<code code="79895-9" displayName="PHOR" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>

```

Figure 2 — OEDD section tags

4.4.4 Handling of common data

4.4.4.1 General

Common data, such as ophthalmic examination title, are described in the CDA Header part between the <ClinicalDocument> tag and <structuredBody>. This common data will be present only once in a file.

4.4.4.2 Common data tags

The items to be described in the necessity column have the following meanings. See details in [Table 3](#).

2) LOINC is the registered trademark of Regenstrief Institute. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

Table 3 — Common data tags

Tag name	Description	Necessity ^a
ClinicalDocument	CDA-R2	D
typeId	Type ID. The compliant CDA R2 specifications are identified.	D
id	ID for unique identification specified at hospitals, etc. or groups	D
code	A code which represents the reporting category.	D
title	Ex) Ophthalmic examinations	D
effectiveTime	Date & time of creation of the file (yyyymmddhhmmss)	C
confidentialityCode	Confidentiality level code. The confidentiality value in the HL7 vocabulary domain is used. Ex) code="N"	D
languageCode	languageCode Ex) code="jpn"	D
versionNumber	Document version number	D
recordTarget	Patient	D
patientRole	Patient information	D
id	Patient No. (number of the order of examination) ^b Ex) extension="123456"	D
patient	Patient name ^c	C
name	Alphabetic expression ^c	C
family	family name ^c	C
given	Given name ^c	C
name	Regional ideographic or phonetic name ^c	O
family	family name ^c	O
given	Given name ^c	O
administrativeGenderCode	Patient's sex EX) F/M/UN ^d	C
birthTime	Patient's date of birth (yyyymmdd)	C
author	Author	D
^a The items in the Necessity column have the following meanings: D - Tags and values are necessary for both Complete CDA and deviceCDA C - Tags and values are necessary for Complete CDA O - No tags or values are necessary ^b Multiple settings are allowed for Patient No. Also, nullFlavor="NI" is allowed. ^c Multiple settings are allowed for Patient name. If First name and Last name cannot be separated, the Last name should be entered in the First name section. Also, nullFlavor="NI" is allowed. ^d Refer to Annex B .		

Table 3 (continued)

Tag name	Description	Necessity ^a
time	Date & time of creation (yyyymmddhhmmss)	D
assignedAuthor	Information of the organization that prepares the document.	D
id	Assigned Author ID "NI" : If id is none	D
assignedAuthoringDevice	Assigned Authoring Device	D
manufacturerModelName	Model name and No. for distinction among the devices of the same model	D
softwareName	Software and ROM version	D
representedOrganization	Represented Organization	C
id	Represented Organization ID "NI": If id is none	C
name	Company name	C
custodian	custodian	C
assignedCustodian	Assigned Custodian	C
representedCustodianOrganization	Represented Custodian Organization	C
id	Represented Custodian Organization ID "NI": If id is none	C
documentationOf	Operator	C
serviceEvent	serviceEvent code EX) classCode="ACSN"	C
code	serviceEvent code	C
performer	performer type code EX) typeCode="PRF"	C
functionCode	Function Code EX) code="SNRS" ^d	C
assignedEntity	assignedEntity	C
id	Operator ID	C
^a The items in the Necessity column have the following meanings: D - Tags and values are necessary for both Complete CDA and deviceCDA C - Tags and values are necessary for Complete CDA O - No tags or values are necessary ^b Multiple settings are allowed for Patient No. Also, nullFlavor="NI" is allowed. ^c Multiple settings are allowed for Patient name. If First name and Last name cannot be separated, the Last name should be entered in the First name section. Also, nullFlavor="NI" is allowed. ^d Refer to Annex B .		

4.4.5 Handling of ophthalmic examination data

4.4.5.1 General

Examination data are described in the <structuredBody> section of the deviceCDA as follows.

<structuredBody>

<component>

<section>

---(Refer to [4.4.5.2](#) for detailed content)

<section>

<component>

<structuredBody>

4.4.5.2 Ophthalmic examination data tags

[Table 4](#) shows basic composition of tags used for ophthalmic examination data:

Table 4 — Ophthalmic examination data tags

Tag name	Description	Necessity ^a
component	CDA-R2 component	D
structuredBody		D
Medication information tag can be optionally defined here		-
component	CDA-R2 component	0
section	Section Ex) classCode="DOCSECT" mood-Code="EVN"	0
title	Title of drug to be administrated (mydriatic agent)	0
text	Drug name EX) Mydrin-P	0
entry		0
observation	Ex) classCode="OBS" mood-Code="EVN" (OBS=observation, EVN=examination results)	0
code	drug code EX) 1319810Q1053 ^b	0
Examination tag defined here		-
component	CDA-R2 component	D
section	Section	D
code	LOINC®'s Exam Details Code EX) Set code of LOINC® for REF: "79898-3"	D

^a The items in the Necessity column have the following meanings:

D - Tags and values are necessary for both Complete CDA and deviceCDA

0 - No tags or values are necessary

^b This drug code is for the mydriatic solution (Mydrin®^d-P) listed in the National Health Insurance Drug Price List commonly used in Japan.

^c Refer to [Annex C](#) for detail of examination data measured by each ophthalmic examination device.

^d Mydrin is the registered trademark of Santen Pharmaceutical Co., Ltd. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

Table 4 (continued)

Tag name	Description	Necessity ^a
title	examination title (HTML format)	D
text	detail of examination	D
entry		D
observation	Ex) classCode="OBS" mood-Code="EVN" (OBS=observation, EVN=examination results)	D
code	Examination code Ex) Refraction Sphere Right="28687-2"	D
effectiveTime	Date & time of creation of the file (yyyymmddhhmmss)	D
Value	examination data & unit ^c	D
entryRelationship	Detailed examination data	D
sequenceNumber	Measurement number	D
observation	Ex) classCode="OBS" mood-Code="EVN" (OBS=observation, EVN=examination results)	D
code	Examination code Ex) Refraction Sphere Right="28687-2"	D
value	examination data & unit ^c	D
^a The items in the Necessity column have the following meanings: D - Tags and values are necessary for both Complete CDA and deviceCDA O - No tags or values are necessary ^b This drug code is for the mydriatic solution (Mydrin® ^d -P) listed in the National Health Insurance Drug Price List commonly used in Japan. ^c Refer to Annex C for detail of examination data measured by each ophthalmic examination device. ^d Mydrin is the registered trademark of Santen Pharmaceutical Co., Ltd. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.		

4.4.6 Handling of units of measurement

The unit of measurement for numerical data is described as attribute value "unit".

ex) Sphere data of refractometer

```
<value xsi:type="PQ" unit="Diopter" value="11" />
```

4.5 OEDD XML schema

To comply with CDA-R2, CDA.XSD is designated as XML Schema.

Ex) At the <Clinical document> tag, it is designated as an attribute as follows.

```
<ClinicalDocument xsi:schemaLocation="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc" xmlns:xsi="
https://www.w3.org/2001/XMLSchema-instance xmlns="urn:hl7-org:v3">
```

Annex A **(informative)**

Ophthalmic examination data cases

A.1 Medical care on the first visit and follow-up visits

A visual acuity test is performed both to establish an initial baseline as well as for regular routine medical checkups. REF and KM data provide the initial data when a visual acuity test with PHOR is performed, resulting in significant shortening of visual acuity test time. For that reason, data from various manufacturers' examination devices should be available in the same examination report format, both in the visual acuity test room and medical checkup room.

A.2 Glaucoma

Very long-term follow-up of IOP data with TM from several years to 40 years is required, and a future treatment plan is developed by checking the changes of previously measured IOP data. Because such long-term care is required, and patients' residences can change during that time, the utilization of an internationally standardized examination report format is strongly advised to respond both in Japan and abroad.

A.3 Cataract

A surgical plan is developed with reference to visual acuity data with PHOR, REF and KM data, and a surgical plan is proposed for a patient with reference to examination reports. Even in postoperative care management, the visual acuity data with PHOR are weighed against preoperative examination reports. Especially eye lesions that can lead to blindness such as glaucoma require long-term observation. It is increasingly important during follow-up examinations to have the availability of examination data including historical examination data from the hospitals and ophthalmic clinics in the worldwide.

A.4 Prescription for spectacles

After the performance of REF and KM examinations, a visual acuity test is performed with PHOR using these data as the initial value set. Also, spectacle lens data, measured while patient is wearing the spectacles, are measured with LM to prepare a new prescription for spectacles to correct visual acuity. Availability of historical spectacle lens data and visual acuity data allows prescriptions more acceptable to the users, requiring the international standardization of OEDD data.

Annex B

(informative)

Standard codes used for common data

Table B.1 — Standard Codes for common data

Item	code	Standard system	Description
Patient's sex	F/M/UN	HL7 v3 Namespaces (Code Systems and Value Sets)	2.16.840.1.113883.5.1 (Refer to Reference [8])
Performer code	SNRS	HL7 v3 Namespaces (Code Systems and Value Sets)	2.16.840.1.113883.5.88 (Refer to Reference [9])

Annex C (informative)

Standard codes for ophthalmic examination data

C.1 REF (Refractometer)

Table C.1 — Refractometer tags

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
Refraction		79898-3	Objective refraction panel	M
Sphere	R	28687-2	Right eye Sphere Autorefractor.auto EX) value="-2,50" unit="Dioptor"	M
	L	28691-4	Left eye Sphere Autorefractor.auto	M
Cylinder	R	28688-0	Right eye Cylinder Autorefractor.auto EX) value="0,50" unit="Dioptor"	M
	L	28692-2	Left eye Cylinder Autorefractor.auto	M
Axis	R	28689-8	Right eye Axis Autorefractor.auto EX) value="180" unit="Degrees"	M
	L	28693-0	Left eye Axis Autorefractor.auto	M
AutoRefractorDistance		28696-3	Eye Pupillary distance.binocular Autorefractor.auto EX) value="62,5" unit="mm"	M
VD		95289-5	Eye Corneal vertex distance Autorefractor.auto EX) value="12,00" unit="mm"	M
DiopterStep		95290-3	Sphere measurement increment Refractometer 95299-4 Type of Refractive power measurement increment LA31062-5: "0,01 diop" LA30932-0: "0,06 diop" LA30930-4: "0,12 diop" LA30931-2: "0,25 diop"	O

For the scenario where multiple refractive measurements are sent and the optional <repeatNumber=0 (Median)> section is not sent, the OIS should calculate the median from the list of measurements and store the median in its internal database.

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

"Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases

Table C.1 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
AxisStep		95291-1	Type of Axis measurement increment 95300-0 Axis measurement increment Keratometer LA31063-3: "1 degree" LA31064-1: "5 degrees"	0
CylinderMode ^b		95292-9	Cylinder mode Refractometer LL5573-2Mode +/- /mix LA30924-7: "-" LA30923-9: "+" LA11840-8: "Mixed"	0
DeviceMeasurementMode		95293-7	Device measurement mode LL5593-0 Ophthalmology Device Mode LA31023-7: "CAT (Cataract)" LA31024-5: "IOL (Intraocular Lens)"	0
SE	R	95294-5	Right eye Spherical equivalent Autorefractor.auto EX) value="-2,75" unit="Dioptor"	0
	L	95295-2	Left eye Spherical equivalent Autorefractor.auto	0
WorkingDistance		95297-8	Eye Pupillary distance.binocular far Autorefractor.auto EX) value="40" unit="cm"	0
Near		95296-0	Eye Pupillary distance.binocular near Autorefractor.auto EX) value="60,5" unit="mm"	0
For the scenario where multiple refractive measurements are sent and the optional <repeatNumber=0 (Median)> section is not sent, the OIS should calculate the median from the list of measurements and store the median in its internal database. ^a The items in the Necessity column have the following meanings: M - Tags and values are mandatory O - Tags and values are optional ^b For data element <CylinderMode>, the terms have the following meaning: "+" = the cylinder value is always positive "-" = the cylinder value is always negative "Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases				

C.2 KM (Keratometer)

Table C.2 — Keratometer tags

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
KM		95298-6	Keratometry panel	M
DiopStep		95290-3	Sphere measurement increment Refractometer 95299-4 Type of Refractive power measurement increment LA31062-5: "0,01 diop" LA30932-0: "0,06 diop" LA30930-4: "0,12 diop" LA30931-2: "0,25 diop"	O
AxisStep		95291-1	Type of Axis measurement increment 95300-0 Axis measurement increment Keratometer LA31063-3: "1 degree" LA31064-1: "5 degrees"	O
CylinderMode ^b		95301-8	Cylinder mode by Keratometry LL5573-2 Mode +/- /mix LA30924-7: "-" LA30923-9: "+" LA11840-8: "Mixed"	O
RefractiveIndex		95514-6	Keratometer Refractive index EX) value="1,3375"	M
Radius R1	R	28974-4	Right cornea Base curve 1 by Keratometry EX) value="8,05" unit="mm"	M
Radius R2	R	28976-9	Right cornea Base curve 2 by Keratometry	M
Radius Ave	R	95304-2	Right cornea Mean curvature radius by Keratometry	M
Radius R1	L	28984-3	Left cornea Base curve 1 by Keratometry	M
Radius R2	L	28986-8	Left cornea Base curve 2 by Keratometry	M
Radius Ave	L	95307-5	Left cornea Mean curvature radius by Keratometry	M

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

^c The term "Axis" is used in colloquial clinical parlance. However, the proper optical term for this usage is "meridian" and represents the corneal meridian measured during Keratometry.

^d The data element <CornealSize unit="mm"> is populated by devices in a horizontal measurement direction. However, it is not specified how the measurement is accomplished. The most common use case is "from white to white", but others can exist.

Table C.2 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
Power R1	R	28994-2	Right cornea Flat refractive power by Keratometry EX) value="45,00" unit="Dioptor"	M
Power R2	R	28995-9	Right cornea Steep refractive power by Keratometry	M
Power Ave	R	95308-3	Right cornea Mean refractive power by Keratometry	O
Power Cyl	R	95309-1	Right cornea Cylinder by Keratometry	M
Power R1	L	28996-7	Left cornea Flat refractive power by Keratometry	M
Power R2	L	28997-5	Left cornea Steep refractive power by Keratometry	M
Power Ave	L	95310-9	Left cornea Mean refractive power by Keratometry	O
Power Cyl	L	95311-7	Left cornea Cylinder by Keratometry	M
Axis R1 ^c	R	28975-1	Right cornea Axis by Keratometry EX) value="180" unit="Degrees"	M
Axis R2 ^c	R	28977-7	Right cornea Axis 2 by Keratometry	M
Axis Cyl	R	95309-1	Right cornea Cylinder by Keratometry	M
Axis R1 ^c	L	28985-0	Left cornea Axis by Keratometry	M
Axis R2 ^c	L	28987-6	Left cornea Axis 2 by Keratometry	M
Axis Cyl	L	95311-7	Left cornea Cylinder by Keratometry	M
PupilSizeOn	R	95314-1	Right pupil Diameter by Keratometry EX) value="3,5" unit="mm"	O
PupilSizeOff	R	8642-1	Right pupil Diameter Auto	O
PupilSizeOn	L	95315-8	Left pupil Diameter by Keratometry	O
PupilSizeOff	L	8640-5	Left pupil Diameter Auto	O
CornealSize	R	95316-6	Right cornea Horizontal diameter by Keratometry See note ^d	O
CornealSize	L	95317-4	Left cornea Horizontal diameter by Keratometry See note ^d	O

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

^c The term "Axis" is used in colloquial clinical parlance. However, the proper optical term for this usage is "meridian" and represents the corneal meridian measured during Keratometry.

^d The data element <CornealSize unit="mm"> is populated by devices in a horizontal measurement direction. However, it is not specified how the measurement is accomplished. The most common use case is "from white to white", but others can exist.

C.3 TM (Tonometer)

Table C.3 — Tonometer tags

Tag name	Eye	Code (LOINC®)	Description	Necessity
Tonometry		79896-7	Tonometry panel	M
IOP ^b	R	79892-6	Right eye Intraocular pressure EX) value="22,3" unit="mmHg"	M
	L	79893-4	Left eye Intraocular pressure	M
CorrectedIOP_Param1	R	96087-2	Right cornea Standard thickness parameter EX) value="0,554" unit="mm"	O
	L	96088-0	Left cornea Standard thickness parameter	O
CorrectedIOP_Param2	R	96089-8	Right cornea Volume adjustment parameter EX) value="0,0450"	O
	L	96090-6	Left cornea Volume adjustment parameter	O
CorrectedIOP_CCT	R	79825-6	Right cornea Central corneal thickness Pachymetry EX) value="0,588" unit="mm"	O
	L	79826-4	Left cornea Central corneal thickness Pa- chymetry	O
MeasuredIOP	R	79892-6	Right eye Intraocular pressure EX) value="22,3" unit="mmHg"	M
	L	79893-4	Left eye Intraocular pressure	M
CorrectedIOP	R	96093-0	Right eye Intraocular pressure--compensat- ed Calculated EX) value="20,8" unit="mmHg"	M
	L	96092-2	Left eye Intraocular pressure--compensated Calculated	M
^a The items in the Necessity column have the following meanings: M - Tags and values are mandatory O - Tags and values are optional ^b "mmHg", "kPa" and "hPa" can be used for the unit of intraocular pressure (attribute of <IOP>tag).				

C.4 LM (Lensmeter)

Table C.4 — Lensmeter tags

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
LM		95318-2	Lensmeter panel	M
MeasureMode		95319-0	Corrective lens type LL5567-4 Lens type LA30899-1: "Standard lens" LA30959-3: "Bifocal lens" LA30958-5: "Multifocal lens" LA30898-3: "Progressive lens" LA30961-9: "Framed lens" LA30960-1: "Single lens" LA30897-5: "Contact lens"	0
DiopterStep		95290-3	Sphere measurement increment Refractometer 95299-4 Type of Refractive power measurement increment LA31062-5: "0,01 diop" LA30932-0: "0,06 diop" LA30930-4: "0,12 diop" LA30931-2: "0,25 diop"	0
AxisStep		95321-6	Lensmeter Axis measurement increment LL5576-5 Axis increment LA31063-3: "1 degree" LA31064-1: "5 degrees"	0
^a The items in the Necessity column have the following meanings: M - Tags and values are mandatory O - Tags and values are optional ^b For data element <CylinderMode>, the terms have the following meaning: "+" = the cylinder value is always positive "-" = the cylinder value is always negative "Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases ^c For data element < PrismMode >, the terms have the following meaning: "pb" = polar (uses data elements <Prism unit="pdpt"> and <PrismBase unit="deg">) "xy" = Cartesian (uses data elements <PrismX unit="pdpt" base="out"> and <PrismY unit="pdpt" base="up">) ^d For data element < AddMode >, the terms have the following meaning: "add" = add (uses data elements <ADD unit="Dioptor"> and <ADD2 unit="Dioptor"> "nsph" = near sphere (uses data elements <NearSphere unit="Dioptor"> and <NearSphere2 unit="Dioptor">) ^e Data element <S> is used for a single measurement of a lens (i.e. not specific to the left or right eye)				

Table C.4 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
CylinderMode ^b		95322-4	Cylinder mode LL5573-2 Mode +/-mix LA30924-7: "-" LA30923-9: "+" LA11840-8: "Mixed"	O
PrismDiopterStep		95323-2	Lensmeter Prism measurement increment [Inverse Length] EX) value="0,25" unit="pdpt"	O
PrismBaseStep		96051-8	Lensmeter Prism base direction measurement increment EX) value="1" unit="Degrees"	O
PrismMode ^c		95324-0	Prism mode	O
AddMode ^d		96052-6	Additional power mode	O
Sphere	S ^e	96053-4	Corrective lens Sphere far by Lensmeter EX) value="-3,00" unit="Dioptor"	M
Sphere	R	28780-5	Right corrective lens Sphere far by Lensmeter	M
Sphere	L	55977-3	Left corrective lens Sphere far by Lensmeter	M
Cylinder	S ^e	96054-2	Corrective lens Cylinder far by Lensmeter EX) value="0,00" unit="Dioptor"	M
Cylinder	R	29134-4	Right corrective lens Cylinder far by Lensmeter	M
Cylinder	L	28786-2	Left corrective lens Cylinder far by Lensmeter	M
Axis	S ^e	95325-7	Corrective lens Axis by Lensmeter EX) value="0" unit="Degrees"	M
Axis	R	28781-3	Right corrective lens Axis far by Lensmeter	M
Axis	L	28787-0	Left corrective lens Axis far by Lensmeter	M

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

"Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases

^c For data element < PrismMode >, the terms have the following meaning:

"pb" = polar (uses data elements <Prism unit="pdpt"> and <PrismBase unit="deg">)

"xy" = Cartesian (uses data elements <PrismX unit="pdpt" base="out"> and <PrismY unit="pdpt" base="up">)

^d For data element < AddMode >, the terms have the following meaning:

"add" = add (uses data elements <ADD unit="Dioptor"> and <ADD2 unit="Dioptor">)

"nsph" = near sphere (uses data elements <NearSphere unit="Dioptor"> and <NearSphere2 unit="Dioptor">)

^e Data element <S> is used for a single measurement of a lens

(i.e. not specific to the left or right eye)

Table C.4 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
SE	S ^e	95326-5	Corrective lens Spherical equivalent Calculated	0
SE	R	95327-3	Right corrective lens Spherical equivalent Calculated	0
SE	L	95328-1	Left corrective lens Spherical equivalent Calculated	0
ADD	S ^e	28814-2	Corrective lens Add 1 binocular by Lensmeter EX) value="1,50" unit="Dioptor"	0
ADD	R	28810-0	Right corrective lens Add 1 by Lensmeter	0
ADD	L	28812-6	Left corrective lens Add 1 by Lensmeter	0
ADD2	S ^e	28815-9	Corrective lens Add 2 binocular by Lensmeter	0
ADD2	R	28811-8	Right corrective lens Add 2 by Lensmeter	0
ADD2	L	28813-4	Left corrective lens Add 2 by Lensmeter	0
NearSphere	S ^e	95329-9	Corrective lens Sphere near 1 by Lensmeter EX) value="-1,50" unit="Dioptor"	0
NearSphere	R	28793-8	Right corrective lens Sphere near 1 by Lensmeter	0
NearSphere	L	28802-7	Left corrective lens Sphere near 1 by Lensmeter	0
NearSphere2	S ^e	95330-7	Corrective lens Sphere near 2 by Lensmeter	0
NearSphere2	R	28796-1	Right corrective lens Sphere near 2 by Lensmeter	0
NearSphere2	L	28805-0	Left corrective lens Sphere near 2 by Lensmeter	0
Prism	S ^e	95331-5	Corrective lens Prism by Lensmeter EX) value="0,25" unit="pdpt"	0
Prism	R	95332-3	Right corrective lens Prism by Lensmeter	0
Prism	L	95333-1	Left corrective lens Prism by Lensmeter	0

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

"Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases

^c For data element <PrismMode>, the terms have the following meaning:

"pb" = polar (uses data elements <Prism unit="pdpt"> and <PrismBase unit="deg">)

"xy" = Cartesian (uses data elements <PrismX unit="pdpt" base="out"> and <PrismY unit="pdpt" base="up">)

^d For data element <AddMode>, the terms have the following meaning:

"add" = add (uses data elements <ADD unit="Dioptor"> and <ADD2 unit="Dioptor">)

"nsph" = near sphere (uses data elements <NearSphere unit="Dioptor"> and <NearSphere2 unit="Dioptor">)

^e Data element <S> is used for a single measurement of a lens

(i.e. not specific to the left or right eye)

Table C.4 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
PrismBase	S ^e	96055-9	Corrective lens Prism base direction by Lensmeter EX) value="102" unit="Degrees"	0
PrismBase	R	55982-3	Right corrective lens Prism base direction by Lensmeter	0
PrismBase	L	28788-8	Left corrective lens Prism base direction by Lensmeter	0
PrismXin	S ^e	95334-9	Corrective lens Horizontal prism - in by Lensmeter EX) value="0,00" unit="pdpt"	0
PrismXout	S ^e	95335-6	Corrective lens Horizontal prism - out by Lensmeter	0
PrismXin	R	95336-4	Right corrective lens Horizontal prism - in by Lensmeter	0
PrismXout	R	95337-2	Right corrective lens Horizontal prism - out by Lensmeter	0
PrismXin	L	95338-0	Left corrective lens Horizontal prism - in by Lensmeter	0
PrismXout	L	95339-8	Left corrective lens Horizontal prism - out by Lensmeter	0
PrismYup	S ^e	95340-6	Corrective lens Vertical prism - up by Lensmeter	0
PrismYdown	S ^e	95341-4	Corrective lens Vertical prism - down by Lensmeter	0
PrismYup	R	95342-2	Right corrective lens Vertical prism - up by Lensmeter	0
PrismYdown	R	95343-0	Right corrective lens Vertical prism - down by Lensmeter	0
PrismYup	L	95344-8	Left corrective lens Vertical prism - up by Lensmeter	0
PrismYdown	L	95345-5	Left corrective lens Vertical prism - down by Lensmeter	0

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b For data element <CylinderMode>, the terms have the following meaning:

"+" = the cylinder value is always positive

"-" = the cylinder value is always negative

"Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases

^c For data element <PrismMode>, the terms have the following meaning:

"pb" = polar (uses data elements <Prism unit="pdpt"> and <PrismBase unit="deg">)

"xy" = Cartesian (uses data elements <PrismX unit="pdpt" base="out"> and <PrismY unit="pdpt" base="up">)

^d For data element <AddMode>, the terms have the following meaning:

"add" = add (uses data elements <ADD unit="Dioptor"> and <ADD2 unit="Dioptor">)

"nsph" = near sphere (uses data elements <NearSphere unit="Dioptor"> and <NearSphere2 unit="Dioptor">)

^e Data element <S> is used for a single measurement of a lens

(i.e. not specific to the left or right eye)

Table C.4 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
UVTransmittance	S ^e	95346-3	Corrective lens UV transmittance by Lensmeter EX) value="5" unit="%"	0
UVTransmittance	R	95347-1	Right corrective lens UV transmittance by Lensmeter	0
UVTransmittance	L	95348-9	Left corrective lens UV transmittance by Lensmeter	0
Distance		28792-0	Glasses Pupillary distance.binocular by Lensmeter EX) value="29,5" unit="mm"	0
Distance	R	28782-1	Right glasses lens Pupillary distance.monocular by Lensmeter	0
Distance	L	28789-6	Left glasses lens Pupillary distance.monocular by Lensmeter	0
Near		95349-7	Glasses Pupillary distance.binocular near by Lensmeter EX) value="54,5" unit="mm"	0
Near	R	28799-5	Right glasses lens Pupillary distance.monocular near by Lensmeter	0
Near	L	95350-5	Left glasses lens Pupillary distance.monocular near by Lensmeter	0

- ^a The items in the Necessity column have the following meanings:
M - Tags and values are mandatory
O - Tags and values are optional
- ^b For data element <CylinderMode>, the terms have the following meaning:
"+" = the cylinder value is always positive
"-" = the cylinder value is always negative
"Mixed" = the cylindrical power by positive reading when the refractive power is positive for any meridional angle and the cylindrical power by negative reading in other cases
- ^c For data element <PrismMode>, the terms have the following meaning:
"pb" = polar (uses data elements <Prism unit="pdpt"> and <PrismBase unit="deg">)
"xy" = Cartesian (uses data elements <PrismX unit="pdpt" base="out"> and <PrismY unit="pdpt" base="up">)
- ^d For data element <AddMode>, the terms have the following meaning:
"add" = add (uses data elements <ADD unit="Dioptor"> and <ADD2 unit="Dioptor">)
"nsph" = near sphere (uses data elements <NearSphere unit="Dioptor"> and <NearSphere2 unit="Dioptor">)
- ^e Data element <S> is used for a single measurement of a lens
(i.e. not specific to the left or right eye)

C.5 PHOR (Phoropter)

The tags for the PHOR (Phoropter) are hierarchically organized by examination to avoid duplication of LOINC® codes. In [Table C.5](#), tags indicating hierarchy are shown in bold, and their layer numbers are shown in brackets in the lower right corner. These hierarchical tags are required if any of the

tags contained under them are used. SNOMED CT³⁾ codes (SCTID) are used as examples of tags that indicate hierarchy. Hierarchical structure of PHOR tags is also shown as [Table C.6](#).

Table C.5 — Phoropter tags

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
PHOR		79895-9	Subjective refraction panel	M
RefractionTest (Layer 1)		252886007 (SCTID)	Refraction assessment (procedure)	
RefractionTest_RefType ^b		98367-6	Phoropter Refraction type LL6028-6 Refraction type LA31303-3: "Uncorrected" LA31304-1: "Current Lenses" LA31305-8: "Objective" LA31307-4: "Last Prescription" LA31301-7: "Best Corrected" LA31300-9: "Final Prescription"	M
RefractionTest_CVD		98368-4	Corneal vertex distance by Phoropter The distance between the back surface of the lens and the cornea.	O
RefractionTlest_Far		252887003 (SCTID)	Refraction assessment – distance (procedure)	

SNOMED-CT® codes are referenced as examples of tags that indicate hierarchy. However, SNOMED-CT® codes are just samples and any other equivalent regional codes may be used.

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b "Uncorrected" = unaided, "Current Lenses" = lensmeter measurements + visual acuity through lenses the patient usually wears, also called Habitual, "Objective" = autorefractor measurements + visual acuity, "Last Prescription" = manually entered previous prescription values, "Best Corrected" = final measurements, "Final Prescription" = current prescription

^c Required unless the patient is functionally monocular or if the refractive information is otherwise impossible to obtain

^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

3) SNOMED CT is the registered trademark of the International Health Terminology Standards Development Organisation (IHTSDO). This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
(Layer 2)				
RefractionTest_Far_ViewingDistance		98370-0	Phoropter Viewing distance	O
RefractionTest_Far_Sphere	R	28663-3	Right eye Sphere far by Phoropter	M ^c
RefractionTest_Far_Sphere	L	28668-2	Left eye Sphere far by Phoropter	M ^c
RefractionTest_Far_Cylinder	R	28664-1	Right eye Cylinder far by Phoropter	M ^c
RefractionTest_Far_Cylinder	L	28669-0	Left eye Cylinder far by Phoropter	M ^c
RefractionTest_Far_Axis	R	28665-8	Right eye Axis far by Phoropter	M ^c
RefractionTest_Far_Axis	L	28707-8	Left eye Axis far by Phoropter	M ^c
RefractionTest_Far_Prism	R	98372-6	Right eye Prism far by Phoropter	O
RefractionTest_Far_Prism	L	98373-4	Left eye Prism far by Phoropter	O
RefractionTest_Far_PrismBase	R	98374-2	Right eye Prism base direction far by Phoropter	O
RefractionTest_Far_PrismBase	L	98375-9	Left eye Prism base direction far by Phoropter	O
RefractionTest_Far_PrismX_Out	R	98376-7	Right eye Horizontal prism - out far by Phoropter	O
RefractionTest_Far_PrismX_Out	L	98377-5	Left eye Horizontal prism - out far by Phoropter	O

SNOMED-CT® codes are referenced as examples of tags that indicate hierarchy. However, SNOMED-CT® codes are just samples and any other equivalent regional codes may be used.

^a The items in the Necessity column have the following meanings:

M - Tags and values are mandatory

O - Tags and values are optional

^b "Uncorrected" = unaided, "Current Lenses" = lensmeter measurements + visual acuity through lenses the patient usually wears, also called Habitual, "Objective" = autorefractor measurements + visual acuity, "Last Prescription" = manually entered previous prescription values, "Best Corrected" = final measurements, "Final Prescription" = current prescription

^c Required unless the patient is functionally monocular or if the refractive information is otherwise impossible to obtain

^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Far_PrismX_In	R	98378-3	Right eye Horizontal prism - in far by Phoropter	O
RefractionTest_Far_PrismX_In	L	98379-1	Left eye Horizontal prism - in far by Phoropter	O
RefractionTest_Far_PrismY_Up	R	98380-9	Right eye Vertical prism - up far by Phoropter	O
RefractionTest_Far_PrismY_Up	L	98381-7	Left eye Vertical prism - up far by Phoropter	O
RefractionTest_Far_PrismY_Down	R	98382-5	Right eye Vertical prism - down far by Phoropter	O
RefractionTest_Far_PrismY_Down	L	98383-3	Left eye Vertical prism - down far by Phoropter	O
RefractionTest_Far_VisualAcuity_ConditionType		98384-1	Visual acuity far testing condition by Phoropter LL5692-0 Visual Acuity Condition Types LA6626-1: "Normal" LA31309-0: "Pinhole" LA31310-8: "Contrast" LA31311-6: "Glare" LA31312-4: "Single Optotype" LA31313-2: "Crowded Optotype" LA31314-0: "Optokinetic"	M
RefractionTest_Far_VisualAcuity_ContrastValue		98385-8	Contrast ratio for far visual acuity measurement Phoropter	M ^d

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^b "Uncorrected" = unaided, "Current Lenses" = lensmeter measurements + visual acuity through lenses the patient usually wears, also called Habitual, "Objective" = autorefractor measurements + visual acuity, "Last Prescription" = manually entered previous prescription values, "Best Corrected" = final measurements, "Final Prescription" = current prescription

^c Required unless the patient is functionally monocular or if the refractive information is otherwise impossible to obtain

^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Far_VA	R	28667-4	Right eye Visual acuity far by Phoropter	M ^e
RefractionTest_Far_VA	L	28710-2	Left eye Visual acuity far by Phoropter	M ^e
RefractionTest_Far_VA	B	28711-0	Eye Visual acuity far.binocular by Phoropter	M ^e
RefractionTest_Far_PD	R	98386-6	Right eye Pupillary distance.monocular far by Phoropter	M
RefractionTest_Far_PD	L	98387-4	Left eye Pupillary distance.monocular far by Phoropter	O
RefractionTest_Far_PD	B	98388-2	Eye Pupillary distance.binocular far by Phoropter	O
RefractionTest_Near (Layer 2)		252888008 (SCTID)	Refraction assessment - near (procedure)	
RefractionTest_Near_ViewingDistance		98370-0	Phoropter Viewing distance	
RefractionTest_Near_Sphere	R	28712-8	Right eye Sphere near 1 by Phoropter	M ^c
RefractionTest_Near_Sphere	L	28724-3	Left eye Sphere near 1 by Phoropter	M ^c
RefractionTest_Near_Cylinder	R	28713-6	Right eye Cylinder near by Phoropter	M ^c
RefractionTest_Near_Cylinder	L	28725-0	Left eye Cylinder near by Phoropter	M ^c
RefractionTest_Near_Axis	R	28714-4	Right eye Axis near by Phoropter	M ^c
RefractionTest_Near_Axis	L	28726-8	Left eye Axis near by Phoropter	M ^c

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^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Near_Prism	R	98463-3	Right eye Prism near by Phoropter	0
RefractionTest_Near_Prism	L	98464-1	Left eye Prism near by Phoropter	0
RefractionTest_Near_PrismBase	R	98465-8	Right eye Prism base direction near by Phoropter	0
RefractionTest_Near_PrismBase	L	98466-6	Left eye Prism base direction near by Phoropter	0
RefractionTest_Near_PrismX_Out	R	98467-4	Right eye Horizontal prism - out near by Phoropter	0
RefractionTest_Near_PrismX_Out	L	98468-2	Left eye Horizontal prism - out near by Phoropter	0
RefractionTest_Near_PrismX_In	R	98469-0	Right eye Horizontal prism - in near by Phoropter	0
RefractionTest_Near_PrismX_In	L	98470-8	Left eye Horizontal prism - in near by Phoropter	0
RefractionTest_Near_PrismY_Up	R	98471-6	Right eye Vertical prism - up near by Phoropter	0
RefractionTest_Near_PrismY_Up	L	98472-4	Left eye Vertical prism - up near by Phoropter	0
RefractionTest_Near_PrismY_Down	R	98473-2	Right eye Vertical prism - down near by Phoropter	0
RefractionTest_Near_PrismY_Down	L	98474-0	Left eye Vertical prism - down near by Phoropter	0

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^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Near_VisualAcuity_ConditionType		98475-7	Visual acuity near testing condition by Phoropter LL5692-0 Visual Acuity Condition Types LA6626-1: "Normal" LA31309-0: "Pinhole" LA31310-8: "Contrast" LA31311-6: "Glare" LA31312-4: "Single Optotype" LA31313-2: "Crowded Optotype" LA31314-0: "Optokinetic"	M
RefractionTest_Near_VisualAcuity_ContrastValue		98476-5	Contrast ratio for near visual acuity measurement by Phoropter	M ^d
RefractionTest_Near_VA	R	28719-3	Right eye Visual acuity near by Phoropter	M ^e
RefractionTest_Near_VA	L	55987-2	Left eye Visual acuity near by Phoropter	M ^e
RefractionTest_Near_VA	B	28737-5	Eye Visual acuity N.binocular by Phoropter	M ^e
RefractionTest_Near_PD	R	98477-3	Right eye Pupillary distance.monocular near by Phoropter	O
RefractionTest_Near_PD	L	98478-1	Left eye Pupillary distance.monocular near by Phoropter	O
RefractionTest_Near_PD	B	98479-9	Eye Pupillary distance.binocular near by Phoropter	M
RefractionTest_Intermediate (Layer 2)		252889000 (SCTID)	Refraction assessment - intermediate distance (procedure)	

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^c Required unless the patient is functionally monocular or if the refractive information is otherwise impossible to obtain

^d Required if <VAConditionType> is "Contrast"

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unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Intermediate_ViewingDistance		98370-0	Phoropter Viewing distance	
RefractionTest_Intermediate_Sphere	R	98434-4	Right eye Sphere intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Sphere	L	98435-1	Left eye Sphere intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Cylinder	R	98436-9	Right eye Cylinder intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Cylinder	L	98437-7	Left eye Cylinder intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Axis	R	98438-5	Right eye Axis intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Axis	L	98439-3	Left eye Axis intermediate by Phoropter	M ^c
RefractionTest_Intermediate_Prism	R	98442-7	Right eye Prism intermediate by Phoropter	O
RefractionTest_Intermediate_Prism	L	98443-5	Left eye Prism intermediate by Phoropter	O
RefractionTest_Intermediate_PrismBase	R	98444-3	Right eye Prism base direction intermediate by Phoropter	O
RefractionTest_Intermediate_PrismBase	L	98445-0	Left eye Prism base direction intermediate by Phoropter	O
RefractionTest_Intermediate_PrismX_Out	R	98446-8	Right eye Horizontal prism - out intermediate by Phoropter	O
RefractionTest_Intermediate_PrismX_Out	L	98447-6	Left eye Horizontal prism - out intermediate by Phoropter	O

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^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

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unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Intermediate_PrismX_In	R	98448-4	Right eye Horizontal prism - in intermediate by Phoropter	O
RefractionTest_Intermediate_PrismX_In	L	98449-2	Left eye Horizontal prism - in intermediate by Phoropter	O
RefractionTest_Intermediate_PrismY_Up	R	98450-0	Right eye Vertical prism - up intermediate by Phoropter	O
RefractionTest_Intermediate_PrismY_Up	L	98451-8	Left eye Vertical prism - up intermediate by Phoropter	O
RefractionTest_Intermediate_PrismY_Down	R	98452-6	Right eye Vertical prism - down intermediate by Phoropter	O
RefractionTest_Intermediate_PrismY_Down	L	98453-4	Left eye Vertical prism - down intermediate by Phoropter	O
RefractionTest_Intermediate_VisualAcuity_ConditionType		98454-2	Visual acuity intermediate testing condition by Phoropter LL5692-0 Visual Acuity Condition Types LA6626-1:"Normal" LA31309-0:"Pinhole" LA31310-8:"Contrast" LA31311-6:"Glare" LA31312-4:"Single Optotype" LA31313-2:"Crowded Optotype" LA31314-0:"Optokinetic"	M

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unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
RefractionTest_Intermediate_VisualAcuity_ContrastValue		98455-9	Contrast ratio for intermediate visual acuity measurement by Phoropter	M ^d
RefractionTest_Intermediate_VA	R	98456-7	Right eye Visual acuity intermediate by Phoropter	M ^e
RefractionTest_Intermediate_VA	L	98457-5	Left eye Visual acuity intermediate by Phoropter	M ^e
RefractionTest_Intermediate_VA	B	98458-3	Eye Visual acuity intermediate by Phoropter	M ^e
RefractionTest_Intermediate_PD	R	98459-1	Right eye Pupillary distance.monocular intermediate by Phoropter	M
RefractionTest_Intermediate_PD	L	98460-9	Left eye Pupillary distance.monocular intermediate by Phoropter	O
RefractionTest_Intermediate_PD	B	98461-7	Eye Pupillary distance.binocular intermediate by Phoropter	O
BinocularTest (Layer 1)		252848003 (SCTID)	Binocular vision test (procedure)	
BinocularTest_Stereopsis (Layer 2)		251763006 (SCTID)	Stereoscopic vision (observable entity)	

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^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Stereopsis_RefType ^b		98367-6	Phoropter Refraction type LL6028-6 Refraction type LA31303-3:"Uncorrected" LA31304-1:"Current Lenses" LA31305-8:"Objective" LA31307-4:"Last Prescription" LA31301-7:"Best Corrected" LA31300-9:"Final Prescription"	M
BinocularTest_Stereopsis_ViewingDistance		98370-0	Phoropter Viewing distance	O
BinocularTest_Stereopsis_Angle		98848-5	Eye Minimum stereopsis angle by Phoropter	M
BinocularTest_Gross-DepthPerception (Layer 2)		421928009 (SCTID)	Stereo depth perception testing (procedure)	

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^d Required if <VAConditionType> is "Contrast"

^e At least one of the <VA> values (R, L, B) data elements shall be sent with a valid value. The units shall be consistent within each specific data element

unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Gross-DepthPerception_RefType ^b		98367-6	Phoropter Refraction type LL6028-6 Refraction type LA31303-3:"Uncorrected" LA31304-1:"Current Lenses" LA31305-8:"Objective" LA31307-4:"Last Prescription" LA31301-7:"Best Corrected" LA31300-9:"Final Prescription"	O
BinocularTest_Gross-DepthPerception_ViewingDistance		98370-0	Phoropter Viewing distance	O
BinocularTest_Gross-DepthPerception_Depth-PerceptionDetected		98849-3	Eye Depth perception by Phoropter	M
BinocularTest_Gross-DepthPerception_ThresholdAngle		98850-1	Eye Threshold angle for measuring depth perception by Phoropter Angle in seconds used for this test(e.g., 800 arc sec)	O
BinocularTest_Worth-4Dots (Layer 2)		415850001 (SCTID)	Worth four-dot test (procedure)	
BinocularTest_Worth-4Dots_Far (Layer 3)		251739003 (SCTID)	Distance visual acuity (observable entity)	

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^d Required if <VAConditionType> is "Contrast"

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unit="ft" means Snellen for <Far> or Reduced Snellen for <Near>, represented in feet,

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unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Worth-4Dots_Far_ViewingDistance		98370-0	Phoropter Viewing distance	O
BinocularTest_Worth-4Dots_Far_Result		98735-4	Eye Worth 4 dot test far [Interpretation] LA32597-9: "Normal fusion" LA32598-7: "Diplopia" LA32599-5: "Right eye suppression" LA32600-1: "Left eye suppression"	M
BinocularTest_Worth-4Dots_Far_RedLensEye		98736-2	Eye that was covered with red lens during test LA4585-1: "Left" LA4306-2: "Right"	M
BinocularTest_Worth-4Dots_Near (Layer 3)		251743004 (SCTID)	Near visual acuity (observable entity)	
BinocularTest_Worth-4Dots_Near_ViewingDistance		98370-0	Phoropter Viewing distance	O
BinocularTest_Worth-4Dots_Near_Result		98737-0	Eye Worth 4 dot test near [Interpretation] LA32597-9: "Normal fusion" LA32598-7: "Diplopia" LA32599-5: "Right eye suppression" LA32600-1: "Left eye suppression"	M

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^d Required if <VAConditionType> is "Contrast"

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as a denominator: 20/x (Note the value 20 is not sent)

unit="m" means Snellen for <Far> or Reduced Snellen for <Near>, represented in meter,

as a denominator: 6/x (Note the value 6 is not sent)

unit="decimal" means Snellen for <Far> or Reduced Snellen for <Near>, represented as

a decimal value

unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Worth-4Dots_Near_RedLensEye		98736-2	Eye that was covered with red lens during test LA4585-1: "Left" LA4306-2: "Right"	M
BinocularTest_ACA-Ratio (Layer 2)		251781009 (SCTID)	Ocular accommodation convergence/accommodation ratio (observable entity)	
BinocularTest_ACARatio_ACARatioType		98738-8	Type of AC/A ratio by Phoropter LA32602-7: "Gradient" LA32601-9: "Calculated"	O
BinocularTest_ACARatio_Result		98739-6	Eye AC/A ratio by Phoropter	M
BinocularTest_Phoria (Layer 2)		14619009 (SCTID)	Phoria (disorder)	
BinocularTest_Phoria_Far (Layer 3)		251739003 (SCTID)	Distance visual acuity (observable entity)	

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unit="log" means visual acuity represented as logMAR

^f When providing Aniseikonia horizontal measurements, data elements <Horizontal>, <HorizontalRefEye> shall have a valid value. When providing Aniseikonia vertical measurements, data elements <Vertical>, <VerticalRefEye> shall have a valid value.

Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Phoria_Far_PhoriaType		98740-4	Type of Phoria exam method LA32603-5: "Polarized cross" LA32604-3: "Cross ring" LA32605-0: "Von Graefe" LA32606-8: "Maddox" LA32607-6: "Mallet" LA32608-4: "Schober"	O
BinocularTest_Phoria_Far_RefType ^b		98367-6	Phoropter Refraction type LL6028-6 Refraction type LA31303-3: "Uncorrected" LA31304-1: "Current Lenses" LA31305-8: "Objective" LA31307-4: "Last Prescription" LA31301-7: "Best Corrected" LA31300-9: "Final Prescription"	M
BinocularTest_Phoria_Far_ViewingDistance		98370-0	Phoropter Viewing distance	M
BinocularTest_Phoria_Far_Prism	R	98742-0	Right eye Prism for far phoria by Phoropter	O
BinocularTest_Phoria_Far_Prism	L	98743-8	Left eye Prism for far phoria by Phoropter	O
BinocularTest_Phoria_Far_PrismBase	R	98744-6	Right eye Prism base direction for far phoria by Phoropter	O

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Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Phoria_Far_PrismBase	L	98745-3	Left eye Prism base direction for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismX_Out	R	98746-1	Right eye Horizontal prism - out for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismX_Out	L	98747-9	Left eye Horizontal prism - out for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismX_In	R	98748-7	Right eye Horizontal prism - in for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismX_In	L	98749-5	Left eye Horizontal prism - in for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismY_Up	R	98750-3	Right eye Vertical prism - up for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismY_Up	L	98751-1	Left eye Vertical prism - up for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismY_Down	R	98752-9	Right eye Vertical prism - down for far phoria by Phoropter	0
BinocularTest_Phoria_Far_PrismY_Down	L	98753-7	Left eye Vertical prism - down for far phoria by Phoropter	0
BinocularTest_Phoria_Near (Layer 3)		251743004 (SCTID)	Near visual acuity (observable entity)	

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Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Phoria_Near_PhoriaType		98740-4	Type of Phoria exam method LA32603-5: "Polarized cross" LA32604-3: "Cross ring" LA32605-0: "Von Graefe" LA32606-8: "Maddox" LA32607-6: "Mallet" LA32608-4: "Schober"	O
BinocularTest_Phoria_Near_RefType ^b		98367-6	Phoropter Refraction type LL6028-6 Refraction type LA31303-3: "Uncorrected" LA31304-1: "Current Lenses" LA31305-8: "Objective" LA31307-4: "Last Prescription" LA31301-7: "Best Corrected" LA31300-9: "Final Prescription"	M
BinocularTest_Phoria_Near_ViewingDistance		98370-0	Phoropter Viewing distance	M
BinocularTest_Phoria_Near_Prism	R	98754-5	Right eye Prism for near phoria by Phoropter	O
BinocularTest_Phoria_Near_Prism	L	98755-2	Left eye Prism for near phoria by Phoropter	O
BinocularTest_Phoria_Near_PrismBase	R	98756-0	Right eye Prism base direction for near phoria by Phoropter	O

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Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Phoria_Near_PrismBase	L	98757-8	Left eye Prism base direction for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismX_Out	R	98758-6	Right eye Horizontal prism - out for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismX_Out	L	98759-4	Left eye Horizontal prism - out for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismX_In	R	98760-2	Right eye Horizontal prism - in for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismX_In	L	98761-0	Left eye Horizontal prism - in for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismY_Up	R	98762-8	Right eye Vertical prism - up for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismY_Up	L	98763-6	Left eye Vertical prism - up for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismY_Down	R	98764-4	Right eye Vertical prism - down for near phoria by Phoropter	0
BinocularTest_Phoria_Near_PrismY_Down	L	98765-1	Left eye Vertical prism - down for near phoria by Phoropter	0
BinocularTest_Vergence (Layer 2)		400927000 (SCTID)	Fusional vergence, function (observable entity)	
BinocularTest_Vergence_Far (Layer 3)		251739003 (SCTID)	Distance visual acuity (observable entity)	
BinocularTest_Vergence_Far_ViewingDistance		98370-0	Phoropter Viewing distance	0

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Table C.5 (continued)

Tag name	Eye	Code (LOINC®)	Description	Necessity ^a
BinocularTest_Vergence_Far_Divergence_Blur		98766-9	Far divergence blur by Phoropter	0
BinocularTest_Vergence_Far_Divergence_Break		98767-7	Far divergence break by Phoropter	0
BinocularTest_Vergence_Far_Divergence_Recover		98768-5	Far divergence recovery by Phoropter	0
BinocularTest_Vergence_Far_Convergence_Blur		98769-3	Far convergence blur by Phoropter	0
BinocularTest_Vergence_Far_Convergence_Break		98770-1	Far convergence break by Phoropter	0
BinocularTest_Vergence_Far_Convergence_Recover		98771-9	Far convergence recovery by Phoropter	0
BinocularTest_Vergence_Far_Infravergence_Eye		98772-7	Eye for far infravergence measurement LA4585-1: "Left" LA4306-2: "Right"	0
BinocularTest_Vergence_Far_Infravergence_Break		98773-5	Far infravergence break by Phoropter	0
BinocularTest_Vergence_Far_Infravergence_Recover		98774-3	Far infravergence recovery by Phoropter	0
BinocularTest_Vergence_Far_Supravergence_Eye		98775-0	Eye for far supravergence measurement LA4585-1: "Left" LA4306-2: "Right"	0

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