

DICOM Correction Proposal

| | |
|---------------------|--|
| STATUS | Letter Ballot |
| Date of Last Update | 2024/06/03 |
| Person Assigned | Christof Schadt |
| Submitter Name | Kaley White kaley@limbus.ai Christof Schadt christof.schadt@brainlab.com |
| Submission Date | 2023/04/25 |

| | |
|---------------------------|---|
| Correction Number | CP-2343 |
| Log Summary: | Add Device to RT ROI Interpreted Type |
| Name of Standard | PS3.3, PS3.6, PS3.16 |
| Rationale for Correction: | <p>There are no appropriate Defined Terms for RT ROI Interpreted Type (3006,00A4) representing radioprotective spacers or implants/devices (e.g., CIEDs, breast expanders).</p> <p>In order to not further stretch the overloaded concept of the Defined Terms of RT ROI Interpreted Type (3006,00A4), but to encourage implementers to use codes instead, only a generic term is introduced for a device where the details are available using the Segmented Property Category Code Sequence (0062,0003) and the RT ROI Identification Code Sequence (3006,0086).</p> <p>In addition, cochlear implant is added to the list of implanted devices. Along with this addition, the CID Implanted Device gets renamed to Cardiovascular Implants and a new CID for implanted devices is added.</p> |
| Correction Wording: | |

In PS3.3 change Table C.8-44

C.8.8.8 RT ROI Observations Module

The RT ROI Observations Module specifies the identification and interpretation of an ROI specified in the Structure Set Module and ROI Contour Module.

Table C.8-44. RT ROI Observations Module Attributes

| Attribute Name | Tag | Type | Attribute Description |
|------------------------------|-------------|------|--|
| RT ROI Observations Sequence | (3006,0080) | 1 | Sequence of observations related to ROIs. One or more Items shall be included in this Sequence. |
| >Observation Number | (3006,0082) | 1 | Identification number of the Observation. The value of Observation Number (3006,0082) shall be unique within the RT ROI Observations Sequence (3006,0080). |
| ... | | | |
| >RT ROI Interpreted Type | (3006,00A4) | 2 | Type of ROI. See Section C.8.8.8.1. Defined Terms: |

| Attribute Name | Tag | Type | Attribute Description |
|----------------|-----|------|--|
| | | | <p>EXTERNAL external patient contour</p> <p>PTV Planning Target Volume (as defined in [ICRU Report 50])</p> <p>CTV Clinical Target Volume (as defined in [ICRU Report 50])</p> <p>GTV Gross Tumor Volume (as defined in [ICRU Report 50])</p> <p>TREATED_VOLUME Treated Volume (as defined in [ICRU Report 50])</p> <p>IRRAD_VOLUME Irradiated Volume (as defined in [ICRU Report 50])</p> <p>OAR Organ at Risk (as defined in [ICRU Report 50])</p> <p>BOLUS patient bolus to be used for external beam therapy</p> <p>AVOIDANCE region in which dose is to be minimized</p> <p>ORGAN patient organ</p> <p>MARKER patient marker or marker on a localizer</p> <p>REGISTRATION registration ROI</p> <p>ISOCENTER treatment isocenter to be used for external beam therapy</p> <p>CONTRAST_AGENT volume into which a contrast agent has been injected</p> <p>CAVITY patient anatomical cavity</p> <p>BRACHY_CHANNEL brachytherapy channel</p> <p>BRACHY_ACCESSORY brachytherapy accessory device</p> <p>BRACHY_SRC_APP brachytherapy source applicator</p> <p>BRACHY_CHNL_SHLD brachytherapy channel shield</p> <p>SUPPORT external patient support device</p> <p>FIXATION external patient fixation or immobilization device</p> <p>DOSE_REGION ROI to be used as a dose reference</p> <p>CONTROL ROI to be used in control of dose optimization and calculation</p> <p>DOSE_MEASUREMENT ROI representing a dose measurement device, such as a chamber or TLD</p> <p><u>DEVICE device not addressed by another Defined Term</u></p> |

In PS3.3 update C.8.8.8.3.1

C.8.8.8.3.1 Mapping of RT ROI Interpreted Type

Table C.8.8.8.3.1-1 defines a mapping between the geometric concepts represented in RT ROI Interpreted Type (3006,00A4) and coded values in Segmented Property Category Code Sequence (0062,0003) in combination with RT ROI Identification Code Sequence (3006,0086).

Table C.8.8.8.3.1-1. RT ROI Interpreted Type Code Mapping

| RT ROI Interpreted Type (3006,00A4) | Segmented Property Category Code Sequence (0062,0003) | RT ROI Identification Code Sequence (3006,0086) |
|--|--|---|
| EXTERNAL | (130047, DCM, "External Body Model") | Any value from DCID 9507 "External Body Model" |
| BOLUS | (130405, DCM, "Patient-Attached Dose Control Object") | (228736002, SCT, "Surface Bolus") |
| MARKER | (130666, DCM, "Radiotherapy Fiducial") | Any value from BCID 7112 "Radiotherapy Fiducial" |
| ISOCENTER | (130043, DCM, "RT Geometric Information") | (130073, DCM, "Isocentric Treatment Location") |
| CONTRAST_AGENT | (105590001, SCT, "Substance") | (7140000, SCT, "Contrast agent") |
| CAVITY | (91723000, SCT, "Anatomical Structure") | (91806002, SCT, "Body Cavity") |
| BRACHY_CHANNEL | (130045, DCM, "Brachytherapy Device") | (130080, DCM, "Brachytherapy channel") |
| BRACHY_ACCESSORY | (130045, DCM, "Brachytherapy Device") | No Baseline CID defined. |
| BRACHY_SRC_APP | (130045, DCM, "Brachytherapy Device") | (130078, DCM, "Brachytherapy source applicator") |
| BRACHY_CHNL_SHLD | (130045, DCM, "Brachytherapy Device") | (130079, DCM, "Brachytherapy channel shield") |
| SUPPORT | (130044, DCM, "Fixation or Positioning Device") | Any value from DCID 9515 "RT Patient Support Device" |
| FIXATION | (130044, DCM, "Fixation or Positioning Device") | Any value from DCID 9513 "Fixation Device" |
| DOSE_REGION | (130748, DCM, "Radiotherapy Dose Region") | (130747, DCM, "Isodose Volume") |
| DOSE_MEASUREMENT | (260787004, SCT, "Physical object") | Any value from DCID 7027 "Segmented Radiotherapeutic Dose Measurement Device" |
| <u>DEVICE</u> | <u>(260787004, SCT, "Physical object")</u> | <u>Any value from DCID 7157 "Device Segmentation Type" or DCID 6401 "Non-lesion Object Type – Physical Object"</u> |

Update PS3.6 Annex A, Table A-3

Table A-3 CONTEXT GROUP UID VALUES

| Context UID | Context Identifier | Context Group Name |
|-------------------------------|--------------------|---|
| 1.2.840.10008.6.1.263 | 3777 | Cardiovascular Implant Implanted Device |
| 1.2.840.10008.6.1.CCC1 | CCC1 | Implanted Device |

Update in PS3.16, Annex B

CID 6401 Non-lesion Object Type - Physical Object

Resources: [HTML](#) | [FHIR JSON](#) | [FHIR XML](#) | [IHE SVS XML](#)
Keyword: NonLesionObjectTypePhysicalObject
FHIR Keyword: dicom-cid-6401-NonLesionObjectTypePhysicalObject
Type: Extensible
Version: [2017091420240229](#)
UID: 1.2.840.10008.6.1.1185

Table CID 6401. Non-lesion Object Type - Physical Object

| Coding Scheme Designator | Code Value | Code Meaning | SNOMED-RT ID | UMLS Concept Unique ID |
|---|----------------------------------|--------------------------|--------------------------------|---------------------------------|
| <u>Include CID CCC1 "Implanted Device"</u> | | | | |
| SCT | 102378009 | BB shot (Lead Pellet) | A-32475 | C0522706 |
| SCT | 86122002 | Bullet | A-32110 | C0336699 |
| SCT | 118378005 | Cardiac Pacemaker | A-11101 | C1289799 |
| SCT | 19923001 | Catheter | A-26800 | C0085590 |
| SCT | 77720000 | Clip | A-12062 | C0175722 |
| SCT | 228761004 | Collimator | A-0110F | C0454169 |
| SCT | 129460009 | Compression paddle | A-10042 | C1268544 |
| SCT | 129467007 | ID Plate | A-16016 | C1268548 |
| SCT | 40388003 | Implant | A-04010 | C0021102 |
| SCT | 129463006 | J Wire | A-1016B | C1268545 |
| SCT | 262301009 | Opaque Marker | A-00D7B | C0445402 |
| DCM | 111175 | Other Marker | | |
| SCT | 56353002 | Staple | A-13600 | C0524724 |
| SCT | 27065002 | Suture | A-13500 | C0038969 |
| SCT | 243135003 | Spacer | | |

Update in PS3.16, Annex B

CID 3777 Cardiovascular Implant~~Implanted Device~~

Resources: [HTML](#) | [FHIR JSON](#) | [FHIR XML](#) | [IHE SVS XML](#)
Keyword: [CardiovascularImplantImplantedDevice](#)
FHIR Keyword: [dicom-cid-3777-CardiovascularImplantImplantedDevice](#)
Type: Extensible
Version: [2007082720240229](#)
UID: 1.2.840.10008.6.1.263

Table CID 3777. [CardiovascularImplantImplantedDevice](#)

| Coding Scheme Designator | Code Value | Code Meaning | SNOMED-RT ID | UMLS Concept Unique ID |
|--------------------------|-------------------------------------|--------------------------------|------------------------------------|-------------------------------------|
| SCT | 14106009 | Cardiac pacemaker | A-11100 | C0030163 |
| SCT | 72506001 | Implantable defibrillator | A-11206 | C0162589 |
| SCT | 360066001 | Left ventricular assist device | A-11FCD | C0181598 |
| SCT | 69805005 | Insulin pump | A-28040 | C1140609 |

Add in PS3.16, Annex B

CID CCC1 Implanted Device

Resources: [HTML](#) | [FHIR JSON](#) | [FHIR XML](#) | [IHE SVS XML](#)
Keyword: [ImplantedDevice](#)
FHIR Keyword: [dicom-cid-NNNN-ImplantedDevice](#)
Type: Extensible
Version: [YYYYMMDD](#)
UID: 1.2.840.10008.6.1.CCC1

Table CID NNNN. Implanted Device

| Coding Scheme Designator | Code Value | Code Meaning | SNOMED-RT ID | UMLS Concept Unique ID |
|--|------------|------------------|-------------------------|--------------------------|
| <i>Include CID 3777 "Cardiovascular Implant"</i> | | | | |
| SCT | 69805005 | Insulin pump | A-28040 | C1140609 |
| SCT | 43252007 | Cochlear Implant | | |