

DICOM Correction Item

Correction Item CP-187 (Letter Ballot)	
Log Summary: Value representations for DX and MG	
Type of Modification: Correction of omissions	Name of Standard: PS 3.3, 3.6 - 1999
<p>Rationale for Correction</p> <p>1. (0018,7050) Filter Material has a VR of LT and VM of 1-n, which is not valid combination as per PS 3.5, since LT may only have a VM of 1. The two alternatives would be to make it VR=LT, VM=1 or VR=LO, VM=1-n. The CS choice is more consistent with the fact that it has defined terms (which are not used with LT) and that there is an inherent correspondence of each value with other attributes specifying the thickness of each material.</p> <p>3. There was no explicit statement of the intended correspondence of multi values of (0018,7050), (0018,7052) and (0018,7054). . It is not proposed to create a Sequence, which would be too big of a change, but to rather to leverage the fact these three attributes are already defined with a VM of 1-n by linking the corresponding values in the three sets of multiple values.</p> <p>4. The IS or US VR of several dose and technique related attributes allows insufficient precision for certain applications such as mammography. Either one could change the existing VR, or add new optional attributes are proposed that allow increased precision by using different units with an IS VR, or a DS VR. Since the approach used with Exposure was to define a new attribute with IS VR, the same approach is proposed here, though at WG 15's request DS has been used rather than IS.</p> <p>5; It is proposed to include this new Entrance Dose Attribute in the MPPS Radiation Dose Module to enable corresponding modalities to report a proper dose through MPPS.</p> <p>It is not proposed to retire the existing (imprecise) attributes due to their widespread use in other objects and the installed base. It is also not proposed to propagate the new attributes into other image objects unless there is demand from the other modality speciality group.</p>	
Sections of documents affected PS 3.6 Section 6, PS 3.3 Sections C.4.16, C.8.7.8, C.7.8.9 and C.7.8.10.	
Correction Wording:	

Amend the following entries in both Section C.8.7.8 X-Ray Acquisition Dose Module Table 8-33 and Section C.8.7.10 X-Ray Filtration Module Table 8-35.

Attribute Name	Tag	Type	Attribute Description
Filter Material	(0018,7050)	3	The X-Ray absorbing material used in the filter. May be multi-valued. Defined Terms: MOLYBDENUM ALUMINUM COPPER RHODIUM NIOBIUM EUROPIUM LEAD
Filter Thickness Minimum	(0018,7052)	3	The minimum thickness in mm of the X-Ray absorbing material used in the filters. May be multi-valued, with values corresponding to the respective values in Filter Material (0018,7050).
Filter Thickness Maximum	(0018,7054)	3	The maximum thickness in mm of the X-Ray absorbing material used in the filters. May be multi-valued, with values corresponding to the respective values in Filter Material (0018,7050).

Insert the following entries in both Section C.8.7.8 X-Ray Acquisition Dose Module Table 8-33 and Section C.8.7.9 X-Ray Generation Module Table 8-34.

Attribute Name	Tag	Type	Attribute Description
X-Ray Tube Current	(0018,1151)	3	X-Ray Tube Current in mA.
X-Ray Tube Current in μA	(0018,8151)	3	X-Ray Tube Current in μA.
Exposure Time	(0018,1150)	3	Duration of X-Ray exposure in msec.
Exposure Time in μS	(0018,8150)	3	Duration of X-Ray exposure in μsec.
Exposure	(0018,1152)	3	The product of exposure time and X-Ray Tube Current expressed in mAs.
Exposure in μ As	(0018,1153)	3	The product of exposure time and X-Ray Tube Current expressed in μ As.

Insert the following entry in Section C.4.16 X-Ray Radiation Dose Module Table 4-16.

Entrance Dose	(0040,0302)	Average entrance dose value measured in dGy at the surface of the patient during this Performed Procedure Step. Note: This may be an estimated value based on assumptions about the patient's body size and habitus.
<u>Entrance Dose in mGy</u>	<u>(0040,8302)</u>	<u>Average entrance dose value measured in mGy at the surface of the patient during this Performed Procedure Step.</u> <u>Note: This may be an estimated value based on assumptions about the patient's body size and habitus.</u>

Insert the following entry in Section C.8.7.8 X-Ray Acquisition Dose Module Table 8-33.

Attribute Name	Tag	Type	Attribute Description
Entrance Dose	(0040,0302)	3	Average entrance dose value measured in dGy at the surface of the patient during the acquisition of this image. Note: This may be an estimated value based on assumptions about the patient's body size and habitus.
<u>Entrance Dose in mGy</u>	<u>(0040,8302)</u>	<u>3</u>	<u>Average entrance dose value measured in mGy at the surface of the patient during the acquisition of this image.</u> <u>Note: This may be an estimated value based on assumptions about the patient's body size and habitus.</u>

Add the following Data Elements to Part 6 Section 6:

<u>(0018,8150)</u>	<u>Exposure Time in μS</u>	<u>DS</u>	<u>1</u>
<u>(0018,8151)</u>	<u>X-Ray Tube Current in μA</u>	<u>DS</u>	<u>1</u>
<u>(0040,8302)</u>	<u>Entrance Dose in mGy</u>	<u>DS</u>	<u>1</u>

Amend the following Data Elements in Part 6 Section 6:

(0018,7050) Filter Material

CS

1-n