

DICOM Correction Proposal Form

Tracking Information - Administration Use Only	
Correction Proposal Number	CP-1513
STATUS	Proposed
Date of Last Update	2016-09-28
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Correction Number	CP-1513
Log Summary: Clarification of meaning of entrance dose	
Type of Modification	Name of Standard
Clarification	DICOM 2015b
Rationale for Correction: <ul style="list-style-type: none"> • The current term “Entrance Dose” and “Entrance Dose in mGy” are ambiguous, because it is not clear whether it refers to air kerma, or dose to patient, or if back-scattering is included. However, for legacy reasons, it is better to add a field to clarify the meaning than replacing it with a completely new term. • Even if the P-RDSR will have better defined dose value of interest, it is still worth to clarify the usage of the existing attributes. P-RDSR will improve but will not replace the existing objects. • There are cases where the patient surface is used as the reference point for the IAK. Therefore, we need to add a new code in Part 16 CID 10025 “Radiation Dose Reference Points” for the patient surface. 	
Sections of documents affected PS3.3 Table C.4-16; Table C.8-33; Table C.8.21.3.4-1; Table C.8.31-1; Table C.8.31.5-1 PS3.6	
Correction Wording:	

Amend PS 3.3 Table C.4.16: <i>clarify the meaning of Entrance Dose and Entrance Dose in mGy</i>
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Table C.4-16. Radiation Dose Module Attributes

Attribute Name	Tag	Attribute Description
...		
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.
Entrance Dose in mGy	(0040,8302)	Average entrance dose value measured in mGy 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 Derivation</u>	<u>(0040,xxx1)</u>	<u>Describes how the values of the Entrance Dose (0040,0302) and Entrance Dose in mGy (0040,8302) are measured, calculated or derived.</u> <u>Enumerated Values:</u> <u>IAK air kerma at the entrance surface, no backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESAK air kerma at the entrance surface, with backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESD absorbed dose in tissue at the entrance surface, with backscatter included.</u>

Amend PS 3.3 Table C.8-33:

C.8.7.8 X-Ray Acquisition Dose Module

This Module describes the attributes related to dose delivery from an X-Ray source during the acquisition of an X-Ray image.

Table C.8-33. X-Ray Acquisition Dose Module Attributes

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.

Attribute Name	Tag	Type	Attribute Description
			Note This may be an estimated value based on assumptions about the patient's body size and habitus.
Entrance Dose in mGy	(0040,8302)	3	Average entrance dose value measured in mGy 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 Derivation</u>	<u>(0040,xxx1)</u>	<u>3</u>	<u>Describes how the values of the Entrance Dose (0040,0302) and Entrance Dose in mGy (0040,8302) are measured, calculated or derived.</u> <u>Enumerated Values:</u> <u>IAK air kerma at the entrance surface, no backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESAK air kerma at the entrance surface, with backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESD absorbed dose in tissue at the entrance surface, with backscatter included.</u>

Amend PS 3.3 Table C.8.21.3.4-1:

C.8.21.3.4 Breast Tomosynthesis Acquisition Module

This section describes the Breast Tomosynthesis Acquisition Module.

Table C.8.21.3.4-1. Breast Tomosynthesis Acquisition Module Attributes

Attribute Name	Tag	Type	Attribute Description
X-Ray 3D Acquisition Sequence	(0018,9507)	1	Each Item represents an acquisition context related to one or more reconstructions. The values of Acquisition Index (0020,9518) may be used as index in this sequence. One or more Items shall be included in this sequence.
...			
>Entrance Dose in mGy	(0040,8302)	3	Entrance dose value measured in mGy at the surface of the patient representing the collective total for all acquired frames described in this sequence item. Note This may be an estimated value based on

Attribute Name	Tag	Type	Attribute Description
			assumptions about the patient's body size and habitus.
<u>Entrance Dose Derivation</u>	<u>(0040,xxx1)</u>	<u>3</u>	<p><u>Describes how the values of the Entrance Dose (0040,0302) and Entrance Dose in mGy (0040,8302) are measured, calculated or derived.</u></p> <p><u>Enumerated Values:</u></p> <p><u>IAK air kerma at the entrance surface, no backscatter included, no air kerma to tissue dose conversion applied.</u></p> <p><u>ESAK air kerma at the entrance surface, with backscatter included, no air kerma to tissue dose conversion applied.</u></p> <p><u>ESD absorbed dose in tissue at the entrance surface, with backscatter included.</u></p>

Amend PS 3.3 Table C.8.31-1:

C.8.31 Breast Projection Image Modules

C.8.31.1 Enhanced Mammography Image Module

Table C.8.31-1 specifies the Attributes that identify and describe general information about the Enhanced Mammography Image Module.

Table C.8.31-1. Enhanced Mammography Image Module Attributes

Attribute Name	Tag	Type	Attribute Description
...			
Entrance Dose in mGy	(0040,8302)	1	Entrance dose value measured in mGy at the surface of the patient representing the collective total for all acquired frames. Note This may be an estimated value based on assumptions about the patient's body size and habitus.
<u>Entrance Dose Derivation</u>	<u>(0040,xxx1)</u>	<u>3</u>	<p><u>Describes how the values of the Entrance Dose (0040,0302) and Entrance Dose in mGy (0040,8302) are measured, calculated or derived.</u></p> <p><u>Enumerated Values:</u></p> <p><u>IAK air kerma at the entrance surface, no backscatter</u></p>

Attribute Name	Tag	Type	Attribute Description
			<u>included, no air kerma to tissue dose conversion applied.</u> <u>ESAK air kerma at the entrance surface, with backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESD absorbed dose in tissue at the entrance surface, with backscatter included.</u>

Amend PS 3.3 Table C.8.31.5-1:

C.8.31.5 Breast X-Ray Acquisition Dose Macro

Table C.8.31.5-1 specifies the Attributes of the X-Ray Acquisition Dose Functional Group Macro.

Table C.8.31.5-1. Breast X-Ray Acquisition Dose Macro Attributes

Attribute Name	Tag	Type	Attribute Description
X-Ray Acquisition Dose Sequence	(0018,9542)	1	Sequence containing the X-Ray exposure information for this frame. Only a single Item shall be included in this sequence.
...			
>Entrance Dose in mGy	(0040,8302)	1	Average entrance dose value measured in mGy 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 Derivation</u>	<u>(0040,xxx1)</u>	<u>3</u>	<u>Describes how the values of the Entrance Dose (0040,0302) and Entrance Dose in mGy (0040,8302) are measured, calculated or derived.</u> <u>Enumerated Values:</u> <u>IAK air kerma at the entrance surface, no backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESAK air kerma at the entrance surface, with backscatter included, no air kerma to tissue dose conversion applied.</u> <u>ESD absorbed dose in tissue at the entrance surface, with backscatter included.</u>

Amend PS 3.6, Section 6:

Tag	Name	Keyword	VR	VM
(0040,xxx1)	Entrance Dose Derivation	EntranceDoseDerivation	CS	1

Amend PS 3.16 Table CID 10025:

CID 10025 Radiation Dose Reference Points

Type: Extensible
 Version: 20120406

Table CID 10025. Radiation Dose Reference Points

Coding Scheme Designator	Code Value	Code Meaning
...
DCM	113941	In Detector Plane
<u>DCM</u>	<u>XXXXX1</u>	<u>At Surface of the Patient</u>

Amend PS 3.16 Table D-1. DICOM Controlled Terminology Definitions:

Table D-1. DICOM Controlled Terminology Definitions

Code Value	Code Meaning	Definition	Notes
<u>XXXXX1</u>	<u>At Surface of the Patient</u>	<u>A point within the irradiated area on the surface of the patient (towards the tube) as the X-Ray beam enters the patient.</u>	