DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2024/03/24
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Submitter Name	Nick Bevins on behalf of WG02/28
Submission Date	2023/05/24

Correction Number	CP-2318
Log Summary: Cassette-Based X-Ray Total DAP	
Name of Standard PS3.16 2024a	
Rationale for Correction: The conditions for inclusion of dose information in the X-Ray RDSR (root TID 10001) prevent accumulated DAP (or KAP) from being included for cassette-based X-Ray systems. Systems with DAP (or KAP) meters are forbidden from using the existing TIDs to provide this information in the RDSR. This CP adds an optional field for Total DAP to TID 10006 Accumulated Cassette-Based Projection Radiography Dose.	
Correction Wording:	

Modify PS3.16 as follows:

TID 10006 Accumulated Cassette-based Projection Radiography Dose

This Template provides information on Projection Radiography dose values accumulated on Cassette-based systems over one or more irradiation events (typically a study or a performed procedure step) from the same equipment.

Type: **Extensible**
Order: **Non-Significant**
Root: **No**

Table TID 10006. Accumulated Cassette-Based Projection Radiography Dose

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CODE	EV (113947, DCM, "Detector Type")	1	MC	IF TID 10001 Row 8 is absent or value is (373066001, SCT, "Yes")	DCID 10030 "Detector Type"
2			NUM	EV (113731, DCM, "Total Number of Radiographic Frames")	1	MC	IF TID 10001 Row 8 is absent or value is (373066001, SCT, "Yes")	UNITS = EV (1, UCUM, "no units")
3			**NUM**	**EV (113722, DCM, "Dose Area Product Total")**	**1**	**U**		**UNITS = EV (Gy.m2, UCUM, "Gy.m2")**

Content Item Descriptions

Row 2	The number of radiographic frames recorded by the X-Ray detector or the number of exposures recorded by the X-Ray

	source, whichever is known to be greater.		
Row 3	**Accumulated Dose Area Product, such as from a meter.**		

TID 10002 Accumulated X-Ray Dose

This general Template provides detailed information on projection X-Ray dose value accumulations over several irradiation events from the same equipment (typically a study or a performed procedure step).

Table TID 10002. Parameters

Parameter Name	Parameter Usage
$Plane	Coded term identifying to which acquisition plane the encoded information belongs.

Type: Extensible
Order: Non-Significant
Root: No

Table TID 10002. Accumulated X-Ray Dose

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (113702, DCM, "Accumulated X-Ray Dose Data")	1	M		
2	>	HAS CONCEPT MOD	CODE	EV (113764, DCM, "Acquisition Plane")	1	M		$Plane
3	>	CONTAINS	CONTAINER	EV (122505, DCM, "Calibration")	1-n	MC	IFF Calibration Data is available	
4	>>	HAS CONCEPT MOD	CODE	EV (113794, DCM, "Dose Measurement Device")	1	M		DCID 10010 "Dose Measurement Device"
5	>>	CONTAINS	DATETIME	EV (113723, DCM, "Calibration DateTime")	1	M		
6	>>	CONTAINS	NUM	EV (122322, DCM, "Calibration Factor")	1	M		UNITS = EV (1, UCUM, "no units")
7	>>	CONTAINS	NUM	EV (113763, DCM, "Calibration Uncertainty")	1	M		UNITS = EV (%, UCUM, "Percent")
8	>>	CONTAINS	TEXT	EV (113724, DCM, "Calibration Responsible Party")	1	M		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
9	>>	CONTAINS	TEXT	EV (113720, DCM, "Calibration Protocol")	1	U		
10	>	CONTAINS	INCLUDE	DTID 10004 "Accumulated Fluoroscopy and Acquisition Projection X-Ray Dose"	1	MC	IFF TID 10001 Row 4 = (113957, DCM, "Fluoroscopy-Guided Projection Radiography System") or TID 10001 Row 2 = (113704, DCM, "Projection X-Ray") and TID 10001 Row 4 is absent)	
11	>	CONTAINS	INCLUDE	DTID 10005 "Accumulated Mammography X-Ray Dose"	1	MC	IFF TID 10001 Row 2 = (71651007, SCT, "Mammography")	
12	>	CONTAINS	INCLUDE	DTID 10007 "Accumulated Total Projection Radiography Dose"	1	MC	IFF TID 10001 Row 4 = (113958, DCM, "Integrated Projection Radiography System") or TID (10001) Row 4 = (113957, DCM, "Fluoroscopy-Guided Projection Radiography System") or TID (10001) Row 2 = (113704, DCM, "Projection X-Ray") and TID (10001) Row 4 is absent)	
13	>	CONTAINS	INCLUDE	DTID 10006 "Accumulated Cassette-based Projection Radiography Dose"	1	MC	IFF TID 10001 Row 4 = (113959, DCM, "Cassette-based Projection Radiography System")	
14	>	CONTAINS	INCLUDE	DTID 1021 "Device Participant"	1	MC	Required if the irradiating device is not the recording device and the dose was accumulated on a single device.	$DeviceProcedureRole = EV (113859, DCM, "Irradiating Device")
15	>	CONTAINS	CODE	EV (128750, DCM, "Equipment Landmark")	1	U		EV (128751, DCM, "Center of Table Head")
16	>>	HAS PROPERTIES	NUM	EV (128752, DCM, "Equipment Landmark X Position")	1	M		UNITS = EV (mm, UCUM, "mm")
17	>>	HAS PROPERTIES	NUM	EV (128753, DCM, "Equipment Landmark Z Position")	1	M		UNITS = EV (mm, UCUM, "mm")

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
18	>	CONTAINS	CONTAINER	EV (128754, DCM, "Patient Location Fiducial")	1-n	U		
19	>>	CONTAINS	INCLUDE	DTID 400 "Reference Location"	1	M		
20	>>	HAS PROPERTIES	NUM	EV (128756, DCM, "Equipment Landmark to Patient Fiducial Z Distance")	1	M		UNITS = EV (mm, UCUM, "mm")

Content Item Descriptions

Row 5	Date that the calibration of the equipment's dose indicators was performed
Row 6	Typically a value provided by the medical physicist. The recorded dose or dose area product values in this report can be multiplied by this factor to obtain estimated real-world values. Note It is important that this value must not be applied to the measured values before storing them in the report.
Row 7	Value range from 0 to 100 percent. Uncertainty of the 'actual' value expressed as+/- of the mean.
Row 8	Identifies Individual or organization responsible for calibration
Row 9	Describes calibration protocol according to equipment standards or local guidelines.
Row 14	The device that produced the irradiation accumulated in this Template. I.e., the X-Ray source. This is not required to be present if the information is the same as that already recorded in TID 1004 "Device Observer Identifying Attributes" encoded via the inclusion of TID 1002 "Observer Context" in TID 10001 "Projection X-Ray Radiation Dose" Row 5, which in turn may be absent if identical to the content in the Enhanced General Equipment Module, or if more than one device produced the accumulated irradiation.
Rows 16 and 17	These coordinates relate a visible landmark on the X-Ray table to the Table Reference Point that is arbitrarily defined by the manufacturer and not necessarily visible to the operator. The Equipment Landmark Y Position is not recorded since it is, by definition, in the plane of the table as is the origin of the Table Coordinate System so the value would always be zero.
Row 19	In many instances, the values will be either: • EV (128772, DCM, "Reference Basis") = (88986008, SCT, "Vertex of Head") with EV (128773, DCM, "Reference Geometry") = (128120, DCM, "Plane through Superior Extent"), or • EV (128772, DCM, "Reference Basis") = (56459004, SCT, "Foot") with EV (128773, DCM, "Reference Geometry") = (128121, DCM, "Plane through Inferior Extent")
Row 20	This distance (likely recorded by the operator) locates the patient with respect to an X-Ray table landmark. The patient is assumed to be centered in the left-right axis of the X-Ray table.