

DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2022/03/31
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Correction Number	CP-1196
Log Summary: Add phantom specific Total DLP Values to allow for Head and Body in same RDSR scope of accumulation	
Name of Standard	PS3.16 2022a
Rationale for Correction:	Some studies do not all use the same phantom as the basis for dose estimates for irradiation events of different regions. For example, an adult head might use a 16cm phantom and an adult body might use a 32cm phantom, and both may be in the same study. It is desirable to report the total DLP for each separately. So the existing single total DLP attribute is extended by additional attributes for the sub-totals together with the phantom reference.
Correction Wording:	

DICOM PS3.16 TID 10012 CT Accumulated Dose Data

Table TID 10012. CT Accumulated Dose Data

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
..								
3	>	CONTAINS	NUM	EV (113813, DCM, "CT Dose Length Product Total")	1	M		Units = EV (mGy.cm, UCUM, "mGy.cm")
3a	≥	CONTAINS	NUM	EV (130745, DCM, "CT Dose Length Product Sub-Total")	2-n	UC	IFF irradiation events within the scope of accumulation use different phantoms for estimating the recorded per-event DLP (i.e., the values of TID 10013 Row 23 are not all the same).	Units = EV (mGy.cm, UCUM, "mGy.cm")
3b	>>	HAS PROPERTIES	CODE	EV (113835, DCM, "CTDIw Phantom Type")	1	M		DCID (4052) Phantom Devices
		...						

Content Item Descriptions

Row 2	Total Number of CT irradiation events. A CT irradiation event is one continuous irradiation procedure and is defined through consistent acquisition parameters. In the case of dose modulation the calculations are based on the effective parameters (e.g. the effective mA recorded in the Mean X-Ray Tube Current), and these acquisition parameters are consistent.
Row 3	The Dose Length Product (DLP) is calculated for every irradiation event. The Dose Length Product Total is the sum of the DLP values. The calculation is based on the CTDI _{vol} result of each irradiation event. If the individual DLP values are calculated using different phantoms, the separate per-phantom sub-totals may be encoded in row 3a.
Row 3a	The sum of the per-event DLP values with the specified phantom.
Row 3b	The phantom used for the phantom-specific sub-total DLP estimate; shall be that specified at the irradiation event level in TID 10013 Row 23 for the events included in the sub-total.
...	

DICOM PS3.16 TID 10041 Accumulated Dose Data

Table TID 10041. Accumulated Dose Data

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (130500, DCM, "Accumulated Dose Data")	1	M		
...								
26	>>	CONTAINS	NUM	EV (113737, DCM, "Distance Source to Reference Point")	1	U		Units = EV (mm, UCUM, "mm")
26a	>	CONTAINS	NUM	EV (130745, DCM, "CT Dose Length Product Sub-Total")	1-n	U		Units = EV (mGy.cm, UCUM, "mGy.cm")
26b	>=	HAS PROPERTIES	CODE	EV (113835, DCM, "CTDIw Phantom Type")	1	M		DCID (4052) Phantom Devices
27	>	CONTAINS	NUM	EV (113812, DCM, "Number of Irradiation Events")	1	U		UNITS = EV ({events}, UCUM, "events")
28	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	1	U		

Content Item Descriptions

...	
Row 26	A single value for calculating reference point dose based on fixed distance.
Row 26a	The Dose Length Product (DLP) is calculated for every irradiation event. The Dose Length Product Sub-Total is the sum of the DLP values for all events within the scope of accumulation that use the same phantom.
Row 26b	The phantom used for the phantom-specific sub-total DLP estimate; shall be that specified at the irradiation event level in TID 10042 Row 29 for the events included in the sub-total.
Row 27	Total Number of irradiation events.

Table CID 10050. Summary Radiation Exposure Quantities

Coding Scheme Designator	Code Value	Code Meaning
...		
DCM	<u>113813</u>	CT Dose Length Product Total
<u>DCM</u>	<u>130745</u>	<u>CT Dose Length Product Sub-Total</u>

Table D-1. DICOM Controlled Terminology Definitions (Coding Scheme Designator "DCM" Coding Scheme Version "01")

Code Value	Code Meaning	Definition	Notes
...			
113813	CT Dose Length Product Total	The total dose length product for the defined scope of accumulation.	
<u>130745</u>	<u>CT Dose Length Product Sub-Total</u>	<u>The total dose length product for irradiation events within in the defined scope of accumulation that were computed using the same phantom.</u>	<u>E.g., when head and body are imaged within the same study and 16cm and 32cm phantoms are used, respectively.</u>
...			