CP-963 Date 2009/10/21

Add DateTime Started to Dose SR Irradiation Event Template

Status: Final Text

DICOM Correction Item

Correction Number	CP-963
Log Summary: Add DateTime Started to Dose SR Irradiation Event Template (TID 10003)	
Type of Modification Addition	Name of Standard PS 3.16 – 2008
Rationale for Correction In Supplement 94 (Diagnostic X-Ray Radiation Dose Reporting (Dose SR)) the concept of providing an individual (Date)Time stamp for each Irradiation Event was omitted. There are requirements from medical physicist community that evaluations are foreseen that plot dose applied over time or perform other evaluation that require knowledge of distribution of irradiation events over time. From discussions in the community, prior to this CP, it can be derived that “observation” related time stamping could lead to misleading results, due to those are set to when the observing system encounters the irradiation event content. This is not what the user community envisions for this. It should be clearly the time the Event was started, i.e. the start of the already encoded concept of “Irradiation Duration” which holds the duration of the X-Ray on phase within that event. The existing concept of “DateTime Started” would perfectly meet the user’s requirements and WG-02 proposes a solution based on that concept. Furthermore WG-02 proposes to follow the structuring of the event and add the content item at the top-most possible row of the template. There are implementations out due to the adoption of Dose SR by the IHE REM profile, but the change is deemed important for the appropriate evaluation of Dose SR instances by Dose Report consumers.	
Sections of documents affected PS 3.16 TID 10003	
Correction Wording:	

Add “DateTime Started” content item to TID 10003 IRRADIATION EVENT X-RAY DATA

TID 10003
IRRADIATION EVENT X-RAY DATA
Type: Extensible

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (113706, DCM, ”Irradiation Event X-Ray Data”)	1	M		
2	>	HAS CONCEPT MOD	CODE	EV (113764, DCM, “Acquisition Plane”	1	M		DCID (10003) Equipment Plane Identification

3	**>**	**CONTAINS**	**DATETIME**	**DT (111526, DCM, "DateTime Started")**	**1**	**M**		
~~3~~**4**	>	CONTAINS	CODE	EV (113721, DCM, "Irradiation Event Type")	1	M		DCID (10002) Irradiation Event Types
~~4~~**5**	>	CONTAINS	TEXT	EV (125203, DCM, "Acquisition Protocol")	1	U		
~~5~~**6**	>	CONTAINS	CODE	EV (T-D0005, SRT, "Anatomical structure")	1	U		
~~6~~**7**	>>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	1	UC	If anatomy is bi-lateral	DCID (244) Laterality
~~7~~**8**	>	CONTAINS	TEXT	EV (113780, DCM, "Reference Point Definition")	1	U		
~~8~~**9**	>	CONTAINS	IMAGE	EV (113795, DCM, "Acquired Image")	1-n	MC	IFF Image Object is created for this irradiation event	
~~9~~**10**	>	CONTAINS	UIDREF	EV (113769, DCM, "Irradiation Event UID")	1	M		
~~10~~ **11**	>	CONTAINS	NUM	EV (122130, DCM, "Dose Area Product"	1	MC	XOR Row ~~11~~**12**, IFF TID (10001) Row 2 = (113704, DCM, "Projection X-Ray")	Units = EV (Gym2, UCUM, "Gym2")
~~11~~ **12**	>	CONTAINS	NUM	EV (111631, DCM, "Average Glandular Dose")	1	MC	XOR Row ~~10~~**11**, IFF TID (10001) Row 2 = (P5-40010, SRT, "Mammography")	Units = EV (dGy, UCUM, "dGy"
~~12~~ **13**	>	CONTAINS	NUM	EV (113738, DCM, "Dose (RP)")	1	MC	XOR Row ~~13~~**14**, IFF TID (10001) Row 2 = (113704, DCM, "Projection X-Ray")	Units = EV (Gy, UCUM, "Gy")
~~13~~ **14**	>	CONTAINS	NUM	EV (111636, DCM, "Entrance Exposure at RP")	1	MC	XOR Row ~~12~~**13**, IFF TID (10001) Row 2 = (P5-40010, SRT, "Mammography")	Units = EV (mGy, UCUM, "mGy")
~~14~~ **15**	>	CONTAINS	NUM	EV (112011, DCM, "Positioner Primary Angle")	1	UC	XOR Row ~~18~~**19**	Units = EV (deg, UCUM, "°")
~~15~~ **16**	>	CONTAINS	NUM	EV (112012, DCM, "Positioner Secondary Angle")	1	UC	XOR Row ~~18~~**19**	Units = EV (deg, UCUM, "°")
~~16~~ **17**	>	CONTAINS	NUM	EV (113739, DCM, "Positioner Primary End Angle"	1	UC	IFF Row ~~3~~**4** value = (113613, DCM, "Rotational Acquisition")	Units = EV (deg, UCUM, "°")
~~17~~ **18**	>	CONTAINS	NUM	EV (113740, DCM, "Positioner Secondary End Angle"	1	UC	IFF Row ~~3~~**4** value = (113613, DCM, "Rotational Acquisition")	Units = EV (deg, UCUM, "°")
~~18~~ **19**	>	CONTAINS	NUM	EV (113770, DCM, "Column Angulation")	1	UC	XOR Rows ~~14~~**15**,~~15~~**16**	Units = EV (deg, UCUM, "°")
~~19~~ **20**	>	CONTAINS	NUM	EV (113790, DCM, "Collimated Field Area"	1	U		Units = EV (m2, UCUM, "m^2")

~~20~~ 21	>	CONTAINS	CONTAINER	EV (113771, DCM, “X-Ray Filters”)	1-n	U		
~~21~~ 22	>>	CONTAINS	CODE	EV (113772, DCM, “X-Ray Filter Type”)	1	U		DCID (10007) X-Ray Filter Types
~~22~~ 23	>>	CONTAINS	CODE	EV (113757, DCM, “X-Ray Filter Material”)	1	U		DCID (10006) X-Ray Filter Materials
~~23~~ 24	>>	CONTAINS	NUM	EV (113758, DCM, “X-Ray Filter Thickness Minimum”)	1	U		Units = EV (mm, UCUM, “mm”)
~~24~~ 25	>>	CONTAINS	NUM	EV (113773, DCM, “X-Ray Filter Thickness Maximum”)	1	U		Units = EV (mm, UCUM, “mm”)
~~25~~ 26	>	CONTAINS	CODE	EV (113732, DCM, “Fluoro Mode”)	1	UC	IFF Row ~~3~~4 value = (P5-06000, SRT, “Fluoroscopy”)	DCID (10004) Fluoro Modes
~~26~~ 27	>	CONTAINS	NUM	EV (113791, DCM, “Pulse Rate”)	1	MC	IFF Row ~~25~~26 value = (113631, DCM, “Pulsed”)	Units = EV ({pulse}/s, UCUM, “pulse/s”)
~~27~~ 28	>	CONTAINS	NUM	EV (113768, DCM, “Number of Pulses”)	1	M		Units = EV (1, UCUM, “no units”)
~~28~~ 29	>>	HAS CONCEPT MOD	CODE	EV (121401, DCM, “Derivation”)	1	MC	IFF count of pulses in Row ~~27~~28 is estimated	EV (R-10260, SRT, “Estimated”)
~~29~~ 30	>	CONTAINS	NUM	EV (113733, DCM, “KVP”)	1-n	U		Units = EV (kV, UCUM, “kV”)
~~30~~ 31	>	CONTAINS	NUM	EV (113734, DCM, “X-Ray Tube Current”)	1-n	U		Units = EV (mA, UCUM, “mA”)
~~31~~ 32	>	CONTAINS	NUM	EV (113735, DCM, “Exposure Time”)	1	U		Units = EV (ms, UCUM, “ms”)
~~32~~ 33	>	CONTAINS	NUM	EV (113793, DCM, “Pulse Width”)	1-n	U		Units = EV (ms, UCUM, “ms”)
~~33~~ 34	>	CONTAINS	NUM	EV (113736, DCM, “Exposure”)	1-n	U		Units = EV (uAs, UCUM, “uAs”)
~~34~~ 35	>	CONTAINS	NUM	EV (113766, DCM, “Focal Spot Size”)	1	U		Units = EV (mm, UCUM, “mm”)
~~35~~ 36	>	CONTAINS	NUM	EV (113742, DCM, “Irradiation Duration”)	1	U		Units = EV (s, UCUM, “s”)
~~36~~ 37	>	CONTAINS	NUM	EV (113767, DCM, “Average X-Ray Tube Current”)	1	U		Units = EV (mA, UCUM, “mA”)
~~37~~ 38	>	CONTAINS	CODE	EV (113745, DCM, “Patient Table Relationship”)	1	U		DCID (21) Patient Gantry Relationship
~~38~~ 39	>	CONTAINS	CODE	EV (113743, DCM, “Patient Orientation”)	1	U		DCID (19) Patient Orientation
~~39~~ 40	>>	HAS CONCEPT MOD	CODE	EV (113744, DCM, “Patient Orientation Modifier”)	1	M		DCID (20) Patient Orientation Modifier
~~40~~ 41	>	CONTAINS	NUM	DCID (10008) Dose Related Distance Measurements	1-n	U		Units = EV (mm, UCUM, “mm”)
~~41~~ 42	>	CONTAINS	NUM	EV (113754, DCM, “Table Head Tilt Angle”)	1	U		Units = EV (deg, UCUM, “º”)

~~42~~ 43	>	CONTAINS	NUM	EV (113755, DCM, "Table Horizontal Rotation Angle")	1	U		Units = EV (deg, UCUM, "°")
~~43~~ 44	>	CONTAINS	NUM	EV (113756, DCM, "Table Cradle Tilt Angle")	1	U		Units = EV (deg, UCUM, "°")
~~44~~ 45	>	CONTAINS	CODE	EV (123014 , DCM, ("Target Region")	1	U		DCID (4031) Common Anatomic Regions
~~45~~ 46	>	CONTAINS	CODE	EV (111632, DCM, "Anode Target Material"	1	U		DCID (10016) Anode Target Material
~~46~~ 47	>	CONTAINS	NUM	EV (111633, DCM, "Compression Thickness")	1	U		Units = (mm, UCUM, "millimeter")
~~47~~ 48	>	CONTAINS	NUM	EV (111634, DCM, "Half Value Layer")	1	U		Units = (mm, UCUM, "millimeter")
~~48~~ 49	>	CONTAINS	CODE	EV (111635, "X-Ray Grid")	1-n	U		DCID (10017) X-Ray Grid
~~49~~ 50	>	CONTAINS	CODE	EV (F-01710, SRT, "Breast composition")	1	U		DCID (6000) Overall Breast Composition
~~50~~ 51	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	1	U		

Content Item Descriptions

Row 3	**Provide DateTime the application of X-Ray started. This shall correspond to the start of the first irradiation in the Irradiation Event, which defines the starting point for the calculation of Row 36 "Irradiation Duration".**
Row ~~7~~8	Reference Point definition if not provided in TID 10001. A typical reference point for digital mammography is: "Entrance exposure to a 4.2-cm breast thickness".
Row ~~8~~9	Reference to Image instances created during this event, if any. The UID reference(s) provided here shall be the values at the time the images were initially created. (Note that image UIDs may be changed as the images are managed over a long term.)
Row ~~9~~10	If the image generating entity does not assign a DICOM UID to the irradiation event (e.g., for non-digital imaging equipment), the application generating this report shall assign a UID.
Row ~~12~~13	Dose applied by this irradiation event, relative to defined reference point.
Row ~~14~~15	Angle in patient's "equatorial" plane (LAO to RAO). For dynamically changing angle during the event, the start value shall be provided. Equivalent to (0018,1510) in an image instance.
Row ~~15~~16	Angle in patient's "sagittal" plane (CRAN to CAUD). For dynamically changing angle during the event, the start value shall be provided. Equivalent to (0018,1511) in an image instance.
Row ~~16~~17	In case of motion during irradiation event, Positioner Primary ending angle
Row ~~17~~18	In case of motion during irradiation event., Positioner Secondary ending angle
Row ~~18~~19	Column device Angle in equipment based coordinates
Row ~~19~~20	Collimated area at the receptor plane.
Row ~~20~~21	If one or more Filter(s) were applied during this irradiation event
Row ~~27~~28	If a precise count of pulses is not available, an estimated number shall be provided, and the Row ~~24~~25 Concept Modifier shall indicate "Estimated"
Row ~~29~~30	KVP value as measured/recorded by system, either as a single mean value, or as multiple values. If multiple values are provided, their number shall match the value in Row ~~23~~24 "Number of Pulses".
Row ~~30~~31	Tube current as measured/recorded by system, either as a single mean value, or as multiple values. If multiple values are provided, their number shall match the value in Row ~~23~~24 "Number of Pulses".
Row ~~31~~32	Exposure time as measured/recorded by the system.
Row ~~32~~33	Pulse width as measured/recorded by the system, either as a single total value, or as multiple values. If multiple values are provided, their number shall match the value in Row ~~23~~24 "Number of Pulses".

Row ~~33~~34	Exposure as measured/recorded by system, either as a single total value, or as multiple values. If multiple values are provided, their number shall match the value in Row ~~23~~24 "Number of Pulses". The Exposure will be affected by the shape of the pulse and other factors, and may not be a simple multiplication of tube current and exposure time.
Row ~~44~~45	The target region is the anatomy exposed.