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| 1 | Status | Final Text |
| 2 | Date of Last Update | 2016/09/08 |
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| 7 | Submission Date | 2015/12/06 |

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| 8 | Correction Number CP-1562 | |
| 9 | Log Summary: Correct conditions in Referenced and Derivation Image Macros when legacy converted | |
| 10 | Name of Standard | |
| 11 | PS3.3 2016c | |
| 12 | Rationale for Correction: | |
| 13 | The Referenced and Derivation Image Macros are required to be present and populated when the corresponding reference sequences | |
| 14 | are present in the Classic Images that were converted, but the Macros themselves contain mandatory attributes that may be absent | |
| 15 | or empty in the Classic Images and hence cannot be populated, such as Purpose of Reference and Derivation Code Sequence. | |
| 16 | Relax the conditions for the Attribute inclusion based on the SOP Class. This is preferable to relaxing the condition on including the | |
| 17 | functional groups, since the information is useful even without the extra attributes and it is preferable to have them in a standard | |
| 18 | location. | |
| 19 | Correction Wording: | |

Amend DICOM PS3.3 as follows:

A.70 Legacy Converted Enhanced CT Image IOD

A.70.4 Legacy Converted Enhanced CT Image Functional Group Macros

Table A.70-2. Legacy Converted Enhanced CT Image Functional Group Macros

| Functional Group Macro | Section | Usage |
|------------------------|--------------|---|
| Referenced Image | C.7.6.16.2.5 | C - Required if Referenced Image Sequence (0008,1140) was present in any of the Classic Images that were converted. |
| Derivation Image | C.7.6.16.2.6 | C - Required if Source Image Sequence (0008,2112) was present in any of the Classic Images that were converted. |

A.71 Legacy Converted Enhanced MR Image IOD

A.71.4 Legacy Converted Enhanced MR Image Functional Group Macros

Table A.71-2. Legacy Converted Enhanced MR Image Functional Group Macros

| Functional Group Macro | Section | Usage |
|------------------------|--------------|---|
| Referenced Image | C.7.6.16.2.5 | C - Required if Referenced Image Sequence (0008,1140) was present in any of the Classic Images that were converted. |
| Derivation Image | C.7.6.16.2.6 | C - Required if Source Image Sequence (0008,2112) was present in any of the Classic Images that were converted. |

A.72 Legacy Converted Enhanced PET Image IOD

A.72.4 Legacy Converted Enhanced PET Image Functional Group Macros

Table A.72-2. Legacy Converted Enhanced PET Image Functional Group Macros

| Functional Group Macro | Section | Usage |
|------------------------|--------------|---|
| Referenced Image | C.7.6.16.2.5 | C - Required if Referenced Image Sequence (0008,1140) was present in any of the Classic Images that were converted. |
| Derivation Image | C.7.6.16.2.6 | C - Required if Source Image Sequence (0008,2112) was present in any of the Classic Images that were converted. |

C.7.6.16.2.5 Referenced Image Macro

Table C.7.6.16-6. Referenced Image Macro Attributes

| Attribute Name | Tag | Type | Attribute Description |
|---------------------------|-------------|------|---|
| Referenced Image Sequence | (0008,1140) | 2 | The set of images or other composite SOP Instances used to plan the acquisition, if any, and other significant related images. See Section C.7.6.16.2.5.1 for further explanation. Zero or more Items shall be included in this Sequence. |
| >Include ??? | | | |

| Attribute Name | Tag | Type | Attribute Description |
|-------------------------------------|-------------|------|--|
| >Purpose of Reference Code Sequence | (0040,A170) | 1C | Describes the purpose for which the reference is made. Only a single Item shall be included in this Sequence. <u>Required if SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" (Legacy Converted Enhanced CT Image Storage) and not "1.2.840.10008.5.1.4.1.1.4.4" (Legacy Converted Enhanced MR Image Storage) and not "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted Enhanced PET Image Storage), may be present otherwise.</u> See Section C.7.6.16.2.5.1 for further explanation. |
| >>Include ??? | | | Defined ????, or as specified in the IOD invocation of this Functional Group. |

C.7.6.16.2.5.1 Use of Referenced Image Macro

Referenced Image Sequence (0008,1140) shall be used to identify other data objects used to plan the acquisition of this image. Instances referenced for this purpose shall have the same Frame of Reference UID (0020,0052) as this image. For each Item that contains such a reference, the value of Purpose of Reference Code Sequence (0040,A170) shall be ("121311", DCM, "Localizer"). Applications can use the Referenced Image Sequence (0008,1140) in combination with data in Plane Position (Patient) and Plane Orientation (Patient) Macros to provide projections of the position of an image with respect to the referenced image.

The Referenced Image Sequence (0008,1140) may also be present when references to other images (or frames within other images) are required for other reasons, as specified by Purpose of Reference Code Sequence (0040,A170).

Note

An Image may contain references to itself (e.g., to other frames within itself).

C.7.6.16.2.6 Derivation Image Macro

Table C.7.6.16-7. Derivation Image Macro Attributes

| Attribute Name | Tag | Type | Attribute Description |
|---------------------------|-------------|------|---|
| Derivation Image Sequence | (0008,9124) | 2 | The set of Images or other composite SOP Instances that were used to derive this frame. Zero or more Items shall be included in this Sequence. |
| >Derivation Description | (0008,2111) | 3 | A text description of how this frame data was derived. See ??? for further explanation. |
| >Derivation Code Sequence | (0008,9215) | 1C | A coded description of how this frame was derived. See ??? for further explanation. One or more Items shall be included in this Sequence. More than one Item indicates that successive derivation steps have been applied. <u>Required if SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" (Legacy Converted Enhanced CT Image Storage) and not "1.2.840.10008.5.1.4.1.1.4.4" (Legacy Converted Enhanced MR Image Storage) and not "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted Enhanced PET Image Storage), may be present otherwise.</u> |
| >>Include ??? | | | Defined ????. |
| >Source Image Sequence | (0008,2112) | 2 | The set of Images or other Composite SOP Instances that were used to derive this frame. Zero or more Items shall be included in this Sequence. See ??? for further explanation. |
| >>Include ??? | | | |

| Attribute Name | Tag | Type | Attribute Description |
|--------------------------------------|-------------|------|--|
| >>Purpose of Reference Code Sequence | (0040,A170) | 1C | <p>Describes the purpose for which the reference is made, that is what role the source image or frame played in the derivation of this image or frame.</p> <p>Only a single Item shall be included in this Sequence.</p> <p><u>Required if SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" (Legacy Converted Enhanced CT Image Storage) and not "1.2.840.10008.5.1.4.1.1.4.4" (Legacy Converted Enhanced MR Image Storage) and not "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted Enhanced PET Image Storage), may be present otherwise.</u></p> |
| >>>Include ??? | | | Defined ????. |
| >>Spatial Locations Preserved | (0028,135A) | 3 | <p>The extent to which the spatial locations of all pixels are preserved during the processing of the source image that resulted in the current image or frame.</p> <p>Enumerated Values:</p> <p>YES NO REORIENTED_ONLY A projection radiograph that has been flipped, and/or rotated by a multiple of 90 degrees</p> <p>Note</p> <ol style="list-style-type: none"> 1. This applies not only to images with a known relationship to a 3D space, but also to projection images. For example, a projection radiograph such as a mammogram that is processed by a point image processing operation such as contrast enhancement, or a smoothing or edge enhancing convolution, would have a value of YES for this attribute. A projection radiograph that had been magnified or warped geometrically would have a value of NO for this attribute. A projection radiograph that has been flipped, and/or rotated by a multiple of 90 degrees, such that transformation of pixel locations is possible by comparison of the values of Patient Orientation (0020,0020) would have a value of REORIENTED_ONLY. This attribute is typically of importance in relating images with Presentation Intent Type (0008,0068) values of FOR PROCESSING and FOR PRESENTATION. 2. When the value of this attribute is NO, it is not possible to locate on the current image any pixel coordinates that are referenced relative to the source image, such as for example, might be required for rendering CAD findings derived from a referenced FOR PROCESSING image on the current FOR PRESENTATION image. |
| >>Patient Orientation | (0020,0020) | 1C | <p>The Patient Orientation values of the source image.</p> <p>Required if the value of Spatial Locations Preserved (0028,135A) is REORIENTED_ONLY.</p> |