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## DICOM Correction Proposal

STATUS	<del>Letter-Ballet</del> <u>Draft Final Text</u>
Date of Last Update	2024/ <del>0811</del> / <u>2402</u>
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Submission Date	2023/10/26

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Correction Number	CP-2370
Log Summary:	Orientation guidance for vertical CT gantries
Name of Standard	PS3.3; <del>PS3-17</del> <u>2024d</u>
Rationale for Correction:	<p>Most CT gantries have a bore with a horizontal axis and a patient table that moves horizontally in and out of the bore from one side. The usage of attributes relating to patient orientation and couch movement are well understood in this configuration.</p> <p>CT Gantry designs exist where the bore is vertical, the patient stands or is seated in the middle of the bore, and the gantry moves up and down to scan the patient. This CP provides guidance on the usage of related attributes in this configuration.</p> <p>It is desirable that images from vertical gantries be labeled appropriately when presented by naïve image displays that have not been specifically coded to consider such gantries.</p> <p>This CP adds the Enhanced Patient Orientation Module at the Image level.</p> <p>Note:</p> <p>Patient Position (0018,5100) exists at the Series level (in the General Series Module).</p> <p>In terms of the attributes in Table 10-15 and 10-15a,</p> <ul style="list-style-type: none"> <li>Nuclear Medicine Image IOD and PET Image IOD include the NM/PET Patient Orientation Module at the Series level.</li> <li>X-Ray 3D Angiographic Image IOD, X-Ray 3D Craniofacial Image IOD, Breast Projection X-Ray Image IOD, and Enhanced RT Image IOD include these attributes at the Image level.</li> <li>A variety of other RT objects include these attributes at the image/instance level.</li> </ul> <p>It is undesirable for the same attribute to exist at different levels in the information hierarchy, but that situation already exists. This CP follows the majority of the IODs.</p> <p><i>[Comment. UG Austria: Line 144/145 – HFV should be FFV, HFI should be FFI. FIXED.]</i></p> <p><i>[Comment. Hologic: PS3.17 is referenced as affected but there are no changes included for PS3.17. REMOVED.]</i></p> <p><i>[Comment. Hologic: line 231: Which section is the text after "Enhanced Patient Orientation Module" supposed to be in? Should this be labeled section C.7.6.xx.2, with an extended title that includes "Attributes Description"? Does this text apply to all instantiations of Table 10-15 or 10-15a, such that the placement would be more appropriate in 10.12? FIXED. Moved to new C.7.6.xx.1 Enhanced Patient Orientation Module Attributes section]</i></p> <p><i>[Comment. Hologic: line 245: Which section is the text after "Patient Position (0018,5100)" supposed to be in? Should this be labeled C.7.6.xx.2.1, or C.7.6.xx.3? FIXED.]</i></p> <p><i>[Comment. Hologic: "Other Relevant Attributes" a subsection of C.7.6.xx.1 Guidance for Vertical Gantries? If so, should it be labeled C.7.6.xx.1.3 and placed immediately after X.7.6.xx.1.2? FIXED.]</i></p>

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Correction Wording:

Modify attribute description in PS3.3 Table 10-15 as shown to match the attribute name and the referenced explanation.

**Table 10-15. Patient Orientation Macro Attributes**

Attribute Name	Tag	Type	Attribute Description
...			
Patient Gantry Relationship Code Sequence	(0054,0414)	3	Description of the orientation of the Patient with respect to the <b>gantryhead of the table</b> . See Section C.8.4.6.1.3 for further explanation.  Only a single Item is permitted in this Sequence.

Modify PS3.3 A.1.4 tables (not shown) to reflect the IOD Module changes that follow

Add the Enhanced Patient Orientation Module to the CT Image IOD

**A.3.3 CT Image IOD Module Table**

...

**Table A.3-1. CT Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Plane	C.7.6.2	M
...			

Add the Enhanced Patient Orientation Module to the Secondary Capture Image IOD

**A.8.1.3 Secondary Capture Image IOD Module Table**

...

**Table A.8-1. Secondary Capture Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Plane	C.7.6.2	M
...			

21 Add the Enhanced Patient Orientation Module to the Multi-frame Single Bit Secondary Capture Image  
22 IOD

23 **A.8.2.3 Multi-frame Single Bit Secondary Capture Image IOD Module Table**

24 ...

25 **Table A.8-2. Multi-frame Single Bit Secondary Capture Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Pixel	C.7.6.3	M
...			

26

27 Add the Enhanced Patient Orientation Module to the Multi-frame Grayscale Byte Secondary Capture  
28 Image IOD

29 **A.8.3.3 Multi-frame Grayscale Byte Secondary Capture Image IOD Module Table**

30 ...

31 **Table A.8-3. Multi-frame Grayscale Byte Secondary Capture Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Pixel	C.7.6.3	M
...			

32

33 Add the Enhanced Patient Orientation Module to the Multi-frame Grayscale Word Secondary Capture  
34 Image IOD

35 **A.8.4.3 Multi-frame Grayscale Word Secondary Capture Image IOD Module Table**

36 ...

37 **Table A.8-4. Multi-frame Grayscale Word Secondary Capture Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Pixel	C.7.6.3	M
...			

38

39 Add the Enhanced Patient Orientation Module to the Multi-frame True Color Secondary Capture Image  
40 IOD

41 **A.8.5.3 Multi-frame True Color Secondary Capture Image IOD Module Table**

42 ...

43 **Table A.8-5. Multi-frame True Color Secondary Capture Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Pixel	C.7.6.3	M
...			

44

45

46 *Add the Enhanced Patient Orientation Module to the Enhanced CT Image IOD*

47 **A.38.1.3 Enhanced CT Image IOD Module Table**

48 ...

49 **Table A.38-1. Enhanced CT Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Enhanced Contrast/Bolus	C.7.6.4b	C – Required if contrast media was applied
...			

50

51 *Add the Enhanced Patient Orientation Module to the MR Image IOD*

52 **A.4.3 MR Image IOD Module Table**

53 ...

54 **Table A.4-1. MR Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	General Image	<a href="#">C.7.6.1</a>	M
	General Reference	<a href="#">C.12.4</a>	U
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Image Plane	C.7.6.2	M
...			

55

56 *Add the Enhanced Patient Orientation Module to the Enhanced MR Image IOD*

57 **A.36.2.3 Enhanced MR Image IOD Module Table**

58 ...

59 **Table A.36-1. Enhanced MR Image IOD Modules**

IE	Module	Reference	Usage
...			

Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Enhanced Contrast/Bolus	C.7.6.4b	C – Required if contrast media was applied
	...		

60

61 *Add the Enhanced Patient Orientation Module to the MR Spectroscopy IOD*

62 **A.36.3.3 MR Spectroscopy IOD Module Table**

63 ...

64 **Table A.36-3. MR Spectroscopy IOD Modules**

IE	Module	Reference	Usage
...			
MR Spectroscopy	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Enhanced Contrast/Bolus	C.7.6.4b	C – Required if contrast media was applied
	...		

65

66 *Add the Enhanced Patient Orientation Module to the Enhanced MR Color Image IOD*

67 **A.36.4.3 Enhanced MR Color Image IOD Module Table**

68 ...

69 **Table A.36-5. Enhanced MR Color Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Enhanced Contrast/Bolus	C.7.6.4b	C – Required if contrast media was applied
	...		

70

71 *Add the Enhanced Patient Orientation Module to the Enhanced PET Image IOD*

72 **A.56.3 Enhanced PET Image IOD Module Table**

73 ...

74 **Table A.56-1. Enhanced PET Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Intervention	C.7.6.13	U
	...		

75

76 *Add the Enhanced Patient Orientation Module to the Legacy Converted Enhanced CT Image IOD*

77 **A.70.3 Legacy Converted Enhanced CT Image IOD Module Table**

78 ...

79 **Table A.70-1. Legacy Converted Enhanced CT Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Contrast/Bolus	C.7.6.4	U
...			

80

81 *Add the Enhanced Patient Orientation Module to the Legacy Converted Enhanced MR Image IOD*

82 **A.71.3 Legacy Converted Enhanced MR Image IOD Module Table**

83 ...

84 **Table A.71-1. Legacy Converted Enhanced MR Image IOD Modules**

IE	Module	Reference	Usage
...			
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Contrast/Bolus	C.7.6.4	U
...			

85

86 *Add the Enhanced Patient Orientation Module to the Legacy Converted Enhanced PET Image IOD*

87 **A.72.3 Legacy Converted Enhanced PET Image IOD Module Table**

88 ...

89 **Table A.72-1. Legacy Converted Enhanced PET Image IOD Modules**

IE	Module	Reference	Usage
...			
Equipment	General Equipment	<a href="#">C.7.5.1</a>	M
	Enhanced General Equipment	C.7.5.2	M
Image	Image Pixel	C.7.6.3	M
	<b>Enhanced Patient Orientation</b>	<b>C.7.6.xx</b>	<b>U</b>
	Intervention	C.7.6.13	U
...			

90

91 *The Enhanced Patient Orientation Module is not added to the Nuclear Medicine Image IOD or the*  
 92 *Positron Emission Tomography Image IOD because they already include the NM/PET Patient Orientation*  
 93 *Module (at the Series level).*

94 [https://dicom.nema.org/medical/dicom/current/output/chtml/part03/sect\\_C.8.4.6.html](https://dicom.nema.org/medical/dicom/current/output/chtml/part03/sect_C.8.4.6.html)

95 *The NM/PET Patient Orientation Module uses the attributes of Table 10-15, makes them all Type 2 or 2C*  
 96 *and allows Code Meaning to be Type 3 in the referenced code sequences.*

97

98 *Modify [C.7.3.1.1.2](#) as shown*

99 **C.7.3.1.1.2 Patient Position**

100 Patient Position (0018,5100) specifies the positioning of the patient relative to the imaging equipment  
101 space. This Attribute is intended for annotation purposes only. It does not provide an exact mathematical  
102 relationship of the patient to the imaging equipment. **The information in Patient Position (0018,5100)**  
103 **is more formally modeled in the Enhanced Patient Orientation Module. See C.7.6.xx for additional**  
104 **detail, guidance, and discussion of vertical gantry cases.**

105 When multiple subjects are present in the same image, and arranged with different positions, then the  
106 Patient Position (0018,5100) in the General Series Module is nominal, does not apply to each subject, but  
107 does define the relationship of the nominal Patient-Based Coordinate System to the machine.

108 Note: In conjunction with the Patient Position (0018,5100) in each Item of the Group of Patients Identification  
109 Sequence (0010,0027), Patient Position (0018,5100) in the General Series Module may be helpful to  
110 compute patient-relative spatial information for each subject from the Attributes of the Image Plane  
111 Module.

112 When facing the front of the imaging equipment,

- 113 • **HF** Head First is defined as the patient's head being positioned toward the front of the imaging  
114 equipment (i.e., head entering the front of the equipment).
- 115 • **FF** Feet First is defined as the patient's feet being positioned toward the front of the imaging  
116 equipment (i.e., feet entering the front of the equipment).
- 117 • **LF** Left First is defined as the patient's left side being positioned towards the front of the imaging  
118 equipment (i.e., patient's left side entering the front of the equipment).
- 119 • **RF** Right First is defined as the patient's right being positioned towards the front of the imaging  
120 equipment (i.e., patient's right side entering the front of the equipment).
- 121 • **AF Anterior First is defined as the patient's anterior being positioned towards the front of**  
122 **the imaging equipment (i.e., patient's anterior side entering the front of the equipment).**
- 123 • **PF Posterior First is defined as the patient's posterior being positioned towards the front**  
124 **of the imaging equipment (i.e., patient's posterior side entering the front of the equipment).**
- 125 • **P** Prone is defined as the patient's face being positioned in a downward (gravity) direction.
- 126 • **S** Supine is defined as the patient's face being in an upward direction.
- 127 • **DR** Decubitus Right is defined as the patient's right side being in a downward direction.
- 128 • **DL** Decubitus Left is defined as the patient's left side being in a downward direction.
- 129 • **V Vertical is defined as the patient's feet being positioned in a downward (gravity)**  
130 **direction.**
- 131 • **I Inverted is defined as the patient's head being positioned in a downward (gravity)**  
132 **direction.**

133 Defined Terms:

134 HFP Head First-Prone  
135 HFS Head First-Supine  
136 HFDR Head First-Decubitus Right  
137 HFDL Head First-Decubitus Left  
138 **HFV Head First-Vertical**  
139 **HFI Head First-Inverted**  
140 FFDR Feet First-Decubitus Right  
141 FFDL Feet First-Decubitus Left  
142 FFP Feet First-Prone  
143 FFS Feet First-Supine  
144 **HFVFFV Feet First-Vertical**

- 145 **HFIFI Feet First-Inverted**
- 146 LFP Left First-Prone
- 147 LFS Left First-Supine
- 148 **LFDR Left First-Decubitus Right**
- 149 **LFDL Left First-Decubitus Left**
- 150 RFP Right First-Prone
- 151 RFS Right First-Supine
- 152 **RFDR Right First-Decubitus Right**
- 153 **RFDL Right First-Decubitus Left**
- 154 AFDR Anterior First-Decubitus Right
- 155 AFDL Anterior First-Decubitus Left
- 156 **AFP Anterior First-Prone**
- 157 **AFS Anterior First-Supine**
- 158 PFDR Posterior First-Decubitus Right
- 159 PFDL Posterior First-Decubitus Left
- 160 **PPF Posterior First-Prone**
- 161 **PFS Posterior First-Supine**

Notes

1. For quadrupeds, separate concepts for ventral and dorsal are not introduced, rather it is expected that anterior and posterior will be considered synonymous as they are when applied to the trunk.

**2. In earlier versions-releases of the standard, imaging equipment that is aligned vertically with respect to gravity was not addressed. Doing so introduced additional prone, supine, and decubitus variants, as well as vertical and inverted concepts. Older implementations might not recognize or have appropriate behaviors for those Defined Terms. See C.7.6.xx for relevant examples.**

**2. There are no decubitus variants of left or right first, since for imaging equipment that is aligned horizontally with respect to gravity the patient cannot be both decubitus and have the left or right side towards the front of the imaging equipment.**

**3. There are no prone or supine variants of anterior or posterior first, since for imaging equipment that is aligned horizontally with respect to gravity the patient cannot be prone or supine and have the anterior or posterior side towards the front of the imaging equipment.**

Add section to PS3.3 to create an Enhanced Patient Orientation Module

**C.7.6.xx Enhanced Patient Orientation Module**

Table C.7.6.xx-1 specifies the Attributes of the Enhanced Patient Orientation Module, which describe the patient orientation with respect to gravity and equipment.

**Table C.7.6.xx-1. Enhanced Patient Orientation Module Attributes**

Attribute Name	Tag	Type	Attribute Description
Include Table 10-15a "Patient Orientation And Equipment Relationship Macro Attributes"			

**C.7.6.xx.1 Enhanced Patient Orientation Module Attributes**

The Enhanced Patient Orientation Module describes the patient orientation with respect to gravity and to the equipment (i.e., the gantry) using three attributes invoked from the Patient Orientation And Equipment Relationship Macro. See examples in Table C.7.6.xx.1X.Y-1.

Patient Orientation Code Sequence (0054,0410) describes the rough orientation of the imaged part of the Patient with respect to gravity; vertical, horizontal, or in-between.

Note: (102539006, SCT, "semi-erect") refers to the imaged anatomy being partway between erect and recumbent, for example, inclined 45 degrees.

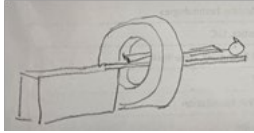

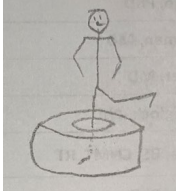

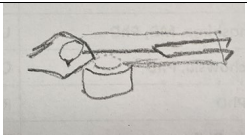
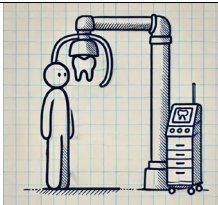
Patient Orientation Modifier Code Sequence (0054,0412) provides a more detailed description of the orientation and positioning of the patient.

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195 Patient Equipment Relationship Code Sequence (3010,0030) describes the orientation of the Patient with  
 196 respect to the imaging equipment.

197 **Table C.7.6.xx.1X.Y-1. Examples of Enhanced Patient Orientation Module Attribute Values**

Graphic	Description	Patient Orientation Code Sequence (0054,0410)	Patient Orientation Modifier Code Sequence (0054,0412)	Patient Equipment Relationship Code Sequence (3010,0030)	Patient Position (0018,5100)
	Current Conventional CT	(102538003, SCT, "recumbent")	(40199007, SCT, "supine")	(102540008, SCT, "headfirst")	HFS
	Standing CT of the Chest	(C86043, NCIt, "erect")	(10904000, SCT, "standing")	(102540008, SCT, "headfirst")	HFV
	Standing CT of the Foot	(C86043, NCIt, "erect")	(10904000, SCT, "standing")	(102540008, SCT, "headfirst")	HFV
	Seated CT of the Chest	(C86043, NCIt, "erect")	(33586001, SCT, "sitting")	(102540008, SCT, "headfirst")	HFV
	Dedicated Breast CT	(102538003, SCT, "recumbent")	(1240000, SCT, "prone")	(126833, DCM, "anterior first")	AFP
	Dental Cone beam	(C86043, NCIt, "erect")	(10904000, SCT, "standing")	(102540008, SCT, "headfirst")	HFV

199 **C.7.6.xx.24 Guidance for Vertical Gantries**

200 This ~~section-Section~~ provides guidance on the population of position and orientation attributes in images  
 201 that were acquired on a vertical gantry. A vertical gantry is defined as one where the axis of the bore is  
 202 aligned in the direction of gravity (See Table ~~C.7.6.xx.1X-Y-1~~), while a horizontal gantry (which is the most  
 203 typical arrangement) has the axis of the bore aligned horizontally (i.e., orthogonal to gravity). If motion is  
 204 required to cover the scan range, a vertical gantry might move up and/or down during scanning, or the  
 205 patient support might move up and/or down.

206 Patient position and orientation can be considered in terms of several relationships; the image pixels with  
 207 respect to the patient, the patient with respect to the gantry, and the patient with respect to gravity.

208 **C.7.6.xx.24.1 Image Ppixels with Rrespect to the Ppatient**

209 The position and orientation of the pixels with respect to the patient is independent of the gantry and is  
 210 thus the same for both vertical and horizontal gantries. A mathematical description is provided in the  
 211 Image Plane Module by Type 1 attributes for Image Position (Patient) (0020,0032) and Image Orientation  
 212 (Patient) (0020,0037). See C.7.6.2.1.1.

213 The General Image Module includes the Type 2C attribute Patient Orientation (0020,0020) which  
 214 provides a rough anatomical orientation. As stated in C.7.6.1.1.1, two letters indicate the direction from  
 215 the first to last pixel in a row, and the direction from the first to last pixel in a column, respectively using  
 216 letters for Anterior, Posterior, Left, Right, Head, and Feet.

217 **C.7.6.xx.24.2 Patient Position wwith Rrespect to the Ggantry and Ggravity**

218 The Patient Position (0018,5100) and the Enhanced Patient Orientation Module Attributes:

- 219 • are intended for annotation, not for mathematical calculations. The patient orientation with respect  
 220 to gravity can be useful to a clinician viewing the images and wanting to understand how gravity  
 221 might be affecting the positioning of the organs.
- 222 • capture the relative orientation of the patient. The relative position (i.e., location) of the patient is  
 223 not captured.
- 224 • relate the patient orientation to the scan axis of the gantry

225 The orientation of the patient with respect to the gantry is generally expressed in terms of the "front" of the  
 226 gantry. To maintain consistency with the existing definitions, for the purposes of these attributes for a  
 227 vertical gantry the "front" of the imaging equipment is considered to be the side containing the bore that is  
 228 closest to the patient support (which may be the ground).

229 These attributes describe the orientation of the patient with respect to the scan axis of the gantry in terms  
 230 of the patient when they are fully outside the imaging equipment on the front side of the imaging  
 231 equipment. The use of terms like "head-first" does not describe the direction of scan progression, the slice  
 232 order, nor the direction of relative patient motion (if any). The values only encode relative orientation. So,  
 233 for a horizontal gantry, a value of Head First is still valid when the patient table is advanced fully into the  
 234 gantry and the patient is scanned as the table comes back out, resulting in the head being temporally the  
 235 last body part scanned. Correspondingly, for a vertical gantry, the value will almost always be Head First  
 236 when scanning progresses either upwards or downwards, given that the front of the gantry is defined as  
 237 the face closest to the patient support and the patient will almost always be seated or standing upright.

238 For horizontal gantries, the orientation of the patient with respect to gravity can also be used to infer the  
 239 approximate patient "rotation" around the scan axis. The anatomical orientation of the image axes is  
 240 captured in Image Position (Patient) (0020,0032) as described above.

241 For vertical gantries, the patient could readily face any direction while standing. The gantry may or may  
 242 not be able to sense the such patient "rotation" around the scan axis. If not, the values in Image  
 243 Orientation (Patient) (0020,0037) will likely depend on standardized acquisition procedures and/or  
 244 technologist input to correctly encode orientation details, just as is done for patients on conventional  
 245 horizontal scanners who are prone or decubitus.

246 **C.7.6.xx.2.3 Relationship to—Patient Position-(0018,5100)**

247 The Series Module includes the Type 2C attribute Patient Position (0018,5100) which is intended to  
 248 support annotation of the orientation of the patient with respect to the scan axis of the gantry and with  
 249 respect to gravity. It does not describe the direction of scanning, slice order, or image orientation.

250 The information in the first two characters of the code string corresponds to the information in the Patient  
 251 Equipment Relationship Code Sequence (3010,0030). See C.7.3.1.1.2 for a definition of the code string  
 252 character values.

253 The information in the subsequent characters of the code string value corresponds to the information in  
 254 the Patient Orientation Modifier Code Sequence (0054,0412), although only the most common situations  
 255 are covered, and not all combinations of these characters with the preceding characters are considered  
 256 valid. See C.7.3.1.1.2 for a definition of the code string character values.

257 **C.7.6.xx.1.32.4 Other Relevant Attributes Relationship to Acquisition Context**

258 Acquisition Context Sequence (0040,0555) permits inclusion of content items such as the following, some  
 259 of which might be more common in a vertical gantry:

- 260 • (130324, DCM, "Functional condition present during acquisition") = (87731000, SCT, "Weight  
 261 bearing")
- 262 • (130324, DCM, "Functional condition present during acquisition") = (367740008, SCT,  
 263 "Suspension")
- 264 • (130324, DCM, "Functional condition present during acquisition") = (129411004, SCT, "Traction")

265

266 *Modify PS3.3 Table C.8-3 as shown.*

267

**Table C.8-3. CT Image Module Attributes**

Attribute Name	Tag	Type	Attribute Description
...			
Gantry/Detector Tilt	(0018,1120)	3	Nominal angle of tilt in degrees of the scanning gantry. Not intended for mathematical computations.
Table Height	(0018,1130)	3	The distance in mm of the top of the patient table to the center of rotation; below the center is positive.
Rotation Direction	(0018,1140)	3	Direction of rotation of the source when relevant, about nearest principal axis of equipment.
...			
Table Speed	(0018,9309)	3	The distance in mm that the table moves in one second during the gathering of data that resulted in this image. <b><u>Table motion is relative to the gantry frame of reference, thus if the gantry is moving, the distance value represents the net motion. This attribute also applies to patient support equipment other than tables.</u></b>
Table Feed per Rotation	(0018,9310)	3	Motion of the table (in mm) during a complete revolution of the source around the gantry orbit. <b><u>Table motion is relative to the gantry frame of reference, thus if the gantry is moving, the feed value represents the net motion. This attribute also</u></b>

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Attribute Name	Tag	Type	Attribute Description
			<u>applies to patient support equipment other than tables.</u>
Spiral Pitch Factor	(0018,9311)	3	Ratio of the Table Feed per Rotation (0018,9310) to the Total Collimation Width (0018,9307).
...			

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269 Modify the following tables to apply the definition modifications shown for PS3.3 Table C.8-3 above:  
270 Table C.8-120 in C.8.15.3.4 CT Table Dynamics Macro  
271 Table C.8.22-18 in C.8.22.5.7 PET Table Dynamics Macro  
272 Table C.34.10-1 in C.34.10 Performed CT Acquisition Module  
273 Do not modify C.36.17 Tomotherapeutic Beam Module - Table C.36.17-1

274

275 Modify PS3.3 Table C.8-121 as shown.

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**Table C.8-121. CT Position Macro Attributes**

Attribute Name	Tag	Type	Attribute Description
CT Position Sequence	(0018,9326)	1	Contains the Attributes defining the CT geometry. Only a single Item shall be included in this Sequence.
>Table Position	(0018,9327)	3	Relative longitudinal position of acquisition location of this frame in mm from an implementation specific reference point. Shall be relative to the same reference point for all frames in this SOP Instance, but may be different from the reference point in other SOP Instances. Positions as the table ( <u>or other patient support</u> ) moves into the gantry ( <u>or as the gantry moves toward the patient support</u> ) viewed from the front are more negative.
...			

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