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8	Correction Number CP-1901	
9	Log Summary: Return in query response what Transfer Syntax is available for retrieval	
10	Name of Standard	
11	PS3.4, PS3.6, PS3.18	
12	Rationale for Correction:	
13	It would be useful to allow the SCU or user agent to obtain from the SCP or origin server the available (or indeed, preferred) Transfer Syntax of an instance.	
14		
15	Then, the SCU could make a specific and appropriate request that is likely to succeed, or not make the attempt if unsuitable. Both C-GET/C-MOVE and WADO-RS provide mechanisms for explicitly specifying the requested Transfer Syntax of an instance for retrieval, and have defaults to use when unspecified that may or may not be suitable.	
16		
17		
18	In all likelihood, the return value for the preferred/available Transfer Syntax would be the form in which an instance is currently stored, but that it not required to be the case if no loss is involved in transcoding from what is stored to the Transfer Syntax that is returned in this proposed attribute.	
19		
20		
21	This is distinct from the existing Alternate Representation Sequence, which provides information about other instances of the same image in different representations (since the SOP Instance UID is required to be changed on lossy compression, for example).	
22		
23	The existing Transfer Syntax UID attribute is not reused, because that is a group 0x0002 data element that is only permitted in the File Meta Information.	
24		
25	The returned value should be multi-valued, e.g., if the provider can provide multiple different forms without loss.	
26	<i>[Ed.Note. Should the attribute be a Sequence instead of a multi-valued attribute? That way other parameters, e.g., the size of the object and/or a hash of it if requested in that TS, could be included as well.]</i>	
27		
28	<i>[Ed.Note: PS3.18 really doesn't address what conversions are required, if any, other than to provide a status code for failure, and it does not make clear that a conversion involving loss requires a different SOP Instance UID. This CP does not address these deficiencies. Should it?]</i>	
29		
30		
31	Correction Wording:	

Amend DICOM PS3.4 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):

C.3.4 Additional Query/Retrieve Attributes

Some optional Attributes that may be used in Query/Retrieve Information Models that are not Attributes of an Information Object Definition and, therefore, are not defined in ????. These Attributes are defined in Table C.3-1.

Table C.3-1. Additional Query/Retrieve Attributes

Attribute Name	Tag	Attribute Description
Number of Patient Related Studies	(0020,1200)	The number of studies that match the Patient level Query/Retrieve search criteria
Number of Patient Related Series	(0020,1202)	The number of series that match the Patient level Query/Retrieve search criteria
Number of Patient Related Instances	(0020,1204)	The number of Composite Object Instances that match the Patient level Query/Retrieve search criteria
Number of Study Related Series	(0020,1206)	The number of series that match the Study level Query/Retrieve search criteria
Number of Series Related Instances	(0020,1209)	The number of Composite Object Instances in a Series that match the Series level Query/Retrieve search criteria
Number of Study Related Instances	(0020,1208)	The number of Composite Object Instances that match the Study level Query/Retrieve search criteria
Modalities in Study	(0008,0061)	All of the distinct values used for Modality (0008,0060) in the Series of the Study.
SOP Classes in Study	(0008,0062)	The SOP Classes contained in the Study.
Anatomic Regions in Study Code Sequence	(0008,0063)	The anatomic regions of interest in this Study (i.e., external anatomy, surface anatomy, or general region of the body). One or more Items are permitted in this Sequence. Note If the Instances in the Study contain Anatomic Region Sequence (0008,2218), then the Items of this Sequence may be the union of the codes in the Instances. Alternatively, multiple (usually contiguous) anatomic regions might be combined into a single code. E.g., (51185008, SCT, "Chest"), (113345001, SCT, "Abdomen") and (12921003, SCT, "Pelvis") might be combined into (416775004, SCT, "Chest, Abdomen and Pelvis"). If Instances in the Study do not contain Anatomic Region Sequence (0008,2218) but do contain Body Part Examined (0018,0015), then codes equivalent to recognized values of Body Part Examined (0018,0015) may be used. See ??? for standard equivalent values. E.g., if an Instance contained Body Part Examined (0018,0015) with a value of "CHEST", then this Sequence might contain (51185008, SCT, "Chest").
Alternate Representation Sequence	(0008,3001)	A Sequence of Items, each identifying an alternate encoding of an image that matches the Instance level Query/Retrieve search criteria (see Section C.6.1.1.5.1)

If the SCP manages images in multiple alternate encodings, only one of the alternate encodings of an image is included in the number of object instances.

1 C.6.1.1.5 Composite Object Instance Level

2 Table C.6-4 defines the keys at the Composite Object Instance Information level of the Patient Root Query/Retrieve Information
3 Model.

4 **Table C.6-4. Composite Object Instance Level Keys for the Patient Root Query/Retrieve Information**
5 **Model**

6 Attribute Name	7 Tag	8 Type
Instance Number	(0020,0013)	R
SOP Instance UID	(0008,0018)	U
SOP Class UID	(0008,0016)	O
Available Transfer Syntax UID	(0008,eee1)	O
Alternate Representation Sequence	(0008,3001)	O
>Series Instance UID	(0020,000E)	O
>SOP Class UID	(0008,1150)	O
>SOP Instance UID	(0008,1155)	O
>Purpose of Reference Code Sequence	(0040,A170)	O
>>Code Value	(0008,0100)	O
>>Coding Scheme Designator	(0008,0102)	O
>>Coding Scheme Version	(0008,0103)	O
>>Code Meaning	(0008,0104)	O
Related General SOP Class UID	(0008,001A)	O
Concept Name Code Sequence	(0040,A043)	O
>Code Value	(0008,0100)	O
>Coding Scheme Designator	(0008,0102)	O
>Coding Scheme Version	(0008,0103)	O
>Code Meaning	(0008,0104)	O
Content Template Sequence	(0040,A504)	O
>Template Identifier	(0040,DB00)	O
>Mapping Resource	(0008,0105)	O
Container Identifier	(0040,0512)	O
Specimen Description Sequence	(0040,0560)	O
>Specimen Identifier	(0040,0551)	O
>Specimen UID	(0040,0554)	O
<i>All Other Attributes at Composite Object Instance Level</i>		O

35 Note

- 36 1. SOP Class UID (0008,0016) is an optional key, but it is strongly recommended that it always be returned by all SCPs,
37 if matching is requested.
- 38 2. The Concept Name Code Sequence (0040,A043) and Content Template Sequence (0040,A504) are optional keys that
39 are useful for identifying instances of various Structured Reporting Storage SOP Classes. It is strongly recommended
40 that these keys be supported by the SCP for query against such instances.

1 C.6.1.1.5.1 Alternate Representation Sequence

2 The Alternate Representation Sequence (0008,3001) encodes a reference to an alternate encoding of the composite image identified
3 in the Query response item. This alternate encoding may utilize a different SOP Class or have different image quality characteristics,
4 but it shall be the same image.

5 **Note**

6 The Alternate Representation Sequence (0008,3001) allows the query response about an original image to reference a lossy
7 compressed version, and vice versa.

8 An image may be lossy compressed, e.g., for long-term archive purposes, and its SOP Instance UID changed. An application processing
9 a SOP Instance that references the original image UID, e.g., a Structured Report, may query the C-FIND SCP for the image. The
10 SCP returns a reference to an accessible version of the image even if the original SOP Instance is no longer available.

11 The Alternate Representation Sequence (0008,3001), if present in a Query Request Identifier, shall be zero-length, or shall contain
12 a single zero-length Item. That is, only Universal Matching is defined for this Attribute.

13 The Alternate Representation Sequence (0008,3001), if present in the Query Response Identifier, may include zero or more Items.
14 Each Alternate Representation Sequence Item in the Query Response Identifier shall include

- 15 • the Series Instance UID (0020,000E) if the alternately encoded image is in a different Series.
- 16 • the SOP Class UID (0008,0016) and SOP Instance UID (0008,0018) of the alternately encoded image.
- 17 • the Purpose of Reference Code Sequence (0040,A170), which shall describe the nature of the alternate encoding of the image.
18 The Purpose of Reference Code Sequence (0040,A170) shall include only one Item. The Baseline Context Group for this Code
19 Sequence is CID 7205.

20 C.6.1.1.5.2 Available SOP Transfer Syntax UID

21 **The Available Transfer Syntax UID (0008,eee1) describes one or more Transfer Syntaxes that the SCP can assure will be**
22 **supported for retrieval of the SOP Instance. This may, but is not required to, include the Transfer Syntax in which the SCP**
23 **has stored the instance. For all Transfer Syntaxes listed, no loss shall be involved in transcoding from whatever is stored.**

24 **The Attribute is multi-valued, and if more than one value is present, then the SCU may interpret those Transfer Syntaxes**
25 **listed earlier as being preferred by the SCP over those listed later. E.g., the order might reflect the amount of effort required**
26 **to convert from the stored form, and the first listed might be the stored form.**

27 **There is no requirement to include every Transfer Syntax in which the instance may be retrieved without loss. E.g., the Default**
28 **Transfer Syntax as specified in PS3.5 Section 10.1, if it is applicable, might be omitted if it is not the Transfer Syntax in which**
29 **the instance happens to be stored.**

30 **Note**

31 **The value of this Attribute may be useful, for example, to determine if the the instance is stored in a lossy Transfer**
32 **Syntax that is not supported by the SCU, and for which decompression or conversion into a different compressed**
33 **form would involve loss and be inappropriate, and require use of an Alternate Representation.**

34 *Amend DICOM PS3.6 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):*

35 6 Registry of DICOM Data Elements

36 **Table 6-1. Registry of DICOM Data Elements**

37 Tag	Name	Keyword	VR	VM	
38 <u>(0008,eee1)</u>	<u>Available Transfer Syntax UID</u>	<u>AvailableTransferSyntaxUID</u>	<u>UI</u>	<u>1-n</u>	

39 *Amend DICOM PS3.18 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):*

10.6 Search Transaction

10.6.3 Response

10.6.3.3 Response Payload

10.6.3.3.3 Instance Resources

For each matching Instance, the origin server shall return all Attributes listed in Table 10.6.3-5, if present in the Instance. The Type column in the table below refers to the Query/Retrieve Attribute Types defined in ????. The unique key for an Instance resource search response is the SOP Instance UID (0008,0018).

Table 10.6.3-5. Instance Resources Search Response Payload

Attribute Name	Tag	Type	Condition
Specific Character Set	(0008,0005)	C	Shall be present if known
SOP Class UID	(0008,0016)	R	
SOP Instance UID	(0008,0018)	U	
Instance Availability	(0008,0056)	C	Shall be present if known
Timezone Offset From UTC	(0008,0201)	C	Shall be present if known
Retrieve URL	(0008,1190)	R	Shall be present if the Instance is retrievable by the Retrieve transaction
Instance Number	(0020,0013)	R	
Rows	(0028,0010)	C	Shall be present if known
Columns	(0028,0011)	C	Shall be present if known
Bits Allocated	(0028,0100)	C	Shall be present if known
Number of Frames	(0028,0008)	C	Shall be present if known

Note

While some of the above Attributes in are optional in ????, they are consistent with the those required in ??? Table 4.14-1.

In addition, the response shall contain:

- All other Instance Level Attributes passed as match parameters, or Study, Series, or Instance Level Attributes passed as includefield parameters that are supported by the origin server.
- If the "includefield" parameter has been specified in the request and its value is "all", Attribute include all available Instance Level Attributes
- If the Target Resource is All Instances, then include all Study level Attributes specified in ???.
- If the Target Resource is All Instances or Study's Instances, then include all Series level Attributes specified in ???.

The response may optionally include:

- **the Available Transfer Syntax UID (0008,eee1) to describe the Transfer Syntaxes that the origin server can assure will be supported for retrieval of the SOP Instance. See PS3.4 Section C.6.1.1.5.2.**