DICOM Correction Proposal

Correction Number CP-326	
Log Summary: Enhance Modality Worklist for NM/PET Workflow, JJ1017, and Coded Contrast	
Type of Modification Addition	Name of Standard PS 3.3, PS 3.4, PS 3.6, PS 3.16

Rationale for Correction

There are three issues that are resolved with a single technical approach.

1. The workflow for NM and PET requires injection of a short half-life radiopharmaceutical at some time prior to imaging. It is important for the Modality Worklist to convey both the time of the injection and the parameters of the radiopharmaceutical so that the technologist can commence the imaging procedure step within an appropriate time. Further, these preliminary step parameters are used to calibrate the imaging process, and are recorded in the image SOP instances.

   Current workflow uses manual processes to manage this data. Since its workflow exactly parallels the use of other MWL attributes, it is appropriate to add this data to MWL. However, unlike Protocol Codes, which are a fixed prescription, these attribute values are measured for each acquisition procedure step. There are currently no MWL attributes appropriate for conveying these values.
2. The Japanese use of Protocol Codes, as documented in JJ1017, requires multiple codes to identify each protocol. Separate code tables are defined for technique, anatomic target, and imaging direction, and it is useful to maintain these as separate codes.
3. The Contrast/Bolus Module allows the contrast agent to be described in an Image IOD via a coded entry using the Contrast/Bolus Agent Sequence (0018,0012) with baseline Context ID 12 - Radiographic Contrast Agent. However, within the Modality Worklist it is only possible to describe the requested contrast agent via a text string using Requested Contrast Agent (0032,1070) with VR of LO and VM of 1. There is thus currently no way for a RIS to inform the modality of requested contrast agents by code, and no unambiguous way to request multiple contrast agents with their specific use (e.g. IV and Rectal).

This proposal adds a generic Protocol Context Sequence attribute to the Scheduled/Performed Protocol Code Sequence, using the same name-value item structure as Acquisition Context or SR Document content items. This allows the robust specification of a variety of contextual items in an extensible manner. A macro for Content Items is defined.

Sections of documents affected

PS 3.3 Section 10 and Annex C

PS 3.4 Annexes F and K

PS 3.6 Section 6

PS 3.16 Sections 3, 6 and Annex D

Correction Wording:

Add PS 3.3 Section 10.2

10.2 CONTENT ITEM MACRO

A Content Item is a flexible means of encoding attribute identifiers and attribute values using the Code Sequence Macro (see Section 8) for coded terminology defined by a coding scheme. The Content Item provides a name-value pair, i.e., a Concept Name, encoded as a Code Sequence, and a Concept Value. The Concept Value may be encoded by any of a set of generic Attributes, as specified by a Value Type, including text, personal name, numeric, and coded concept (Code Sequence) values.

Note: Comparing a Content Item to a native DICOM Data Element, the Concept Name Code Sequence corresponds to the Data Element Tag and Attribute Name, the Value Type to the Value Representation, and the Concept Value to the Data Element Value Field. See PS3.5.

Specific uses of the Content Item may invoke the Content Item Macro defined in this Section, the Document Content Macro of Section C.17.3, or another similar construct. An invocation of the Content Item Macro may constrain the allowed values of Value Type (0040,A040).

Note: The NUMERIC Value Type of this Macro differs from the NUM Value Type defined in Section C.17.3, since the encoding of the Concept Value is different.

See Section 5.4 for the meaning of the Type column in this Macro when applied to Normalized IODs.

Table 10-2
Content Item Macro Attributes Description

Attribute Name	Tag	Type	Attribute Description
Value Type	(0040,A040)	1	The type of the value encoded in this name-value Item. Defined Terms: DATETIME DATE TIME PNAME UIDREF TEXT CODE NUMERIC
Concept Name Code Sequence	(0040,A043)	1	Coded concept name of this name-value Item.
>Include 'Code Sequence Macro' Table 8.8-1			*No Baseline Context ID is defined.*
DateTime	(0040,A120)	1C	Datetime value for this name-value Item. Required if Value Type (0040,A040) is DATETIME.
Date	(0040,A121)	1C	Date value for this name-value Item. Required if Value Type (0040,A040) is DATE.
Time	(0040,A122)	1C	Time value for this name-value Item. Required if Value Type (0040,A040) is TIME.
Person Name	(0040,A123)	1C	Person name value for this name-value Item. Required if Value Type (0040,A040) is PNAME.
UID	(0040,A124)	1C	UID value for this name-value Item. Required if Value Type (0040,A040) is UIDREF.
Text Value	(0040,A160)	1C	Text value for this name-value Item. Required if Value Type (0040,A040) is TEXT.

Concept Code Sequence	(0040,A168)	1C	Coded concept value of this name-value Item. Required if Value Type (0040,A040) is CODE.
>Include 'Code Sequence Macro' Table 8.8-1			*No Baseline Context ID is defined.*
Numeric Value	(0040,A30A)	1C	Numeric value for this name-value Item. Required if Value Type (0040,A040) is NUMERIC.
Measurement Units Code Sequence	(0040,08EA)	1C	Units of measurement for a numeric value in this name-value Item. Required if Value Type (0040,A040) is NUMERIC.
>Include 'Code Sequence Macro' Table 8.8-1			*BCID 82*

Modify PS 3.3 Section C.4.10

Table C.4-10
SCHEDULED PROCEDURE STEP MODULE ATTRIBUTES

Attribute Name	Tag	Attribute Description
Scheduled Procedure Step Sequence	(0040,0100)	One or more Scheduled Procedure Steps for one Requested Procedure.
> …		
>Scheduled Protocol Code Sequence	(0040,0008)	Sequence describing the Scheduled Protocol following a specified coding scheme. This sequence contains one or more Items.
>>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*
>>Protocol Context Sequence	**(0040,0440)**	**Sequence that specifies the context for the Scheduled Protocol Code Sequence Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***
>>> Content Item Modifier Sequence	**(0040,0441)**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***
…		

C.4.10.1 Protocol Context Sequence

The Protocol Context Sequence (0040,0440) allows the specification of parameters that further qualify the scheduled protocol, provided through a set of generic name/value pairs of context Content Items.

Note: This allows the specification of clinical, acquisition, or procedural qualifiers for the scheduled protocol, such as a specific body part, imaging technique, or parameters of a preparatory event (e.g.,

radionuclide injection). Specific uses of this Sequence may be documented in a Template defined in accordance with PS3.16.

Modify PS 3.3 Section C.4.13

Table C.4-13
PERFORMED PROCEDURE STEP RELATIONSHIP MODULE ATTRIBUTES

Attribute Name	Tag	Attribute Description
…		
>Scheduled Protocol Code Sequence	(0040,0008)	Sequence describing the Scheduled Protocol following a specific coding scheme. This sequence contains one or more Items.
>>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*
>>Protocol Context Sequence	**(0040,0440)**	**Sequence that specifies the context for the Scheduled Protocol Code Sequence Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***
>>> Content Item Modifier Sequence	**(0040,0441)**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***

Modify PS 3.3 Section C.4.15

Table C.4-15
IMAGE ACQUISITION RESULTS MODULE ATTRIBUTES

Attribute Name	Tag	Attribute Description
…		
Performed Protocol Code Sequence	(0040,0260)	Sequence describing the Protocol performed for this Procedure Step. This sequence may have zero or more Items.
>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*
>Protocol Context Sequence	**(0040,0440)**	**Sequence that specifies the context for the Performed Protocol Code Sequence Item. One or more items may be included in this sequence.**
>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***
>> Content Item Modifier Sequence	**(0040,0441)**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***

Modify PS 3.3 Section C.7.3.1

Table C.7-5
GENERAL SERIES MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
…			
>Scheduled Protocol Code Sequence	(0040,0008)	3	Sequence describing the Scheduled Protocol following a specific coding scheme. This sequence contains one or more Items.
>>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*	
>>Protocol Context Sequence	**(0040,0440)**	**3**	**Sequence that specifies the context for the Scheduled Protocol Code Sequence Item. One or more items may be included in this sequence.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
>>> Content Item Modifier Sequence	**(0040,0441)**	**3**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
…			
Performed Protocol Code Sequence	(0040,0260)	3	Sequence describing the Protocol performed for this Procedure Step. One or more Items may be included in this Sequence.

>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*	
>Protocol Context Sequence	**(0040,0440)**	**3**	**Sequence that specifies the context for the Performed Protocol Code Sequence Item. One or more items may be included in this sequence.**
>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
>> Content Item Modifier Sequence	**(0040,0441)**	**3**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	

Modify PS 3.3 Section C.8.8.1

Table C.8-33 - RT SERIES MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
…			
>Scheduled Protocol Code Sequence	(0040,0008)	3	Sequence describing the Scheduled Protocol following a specific coding scheme. This sequence contains one or more Items.
>>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*	
>>Protocol Context Sequence	**(0040,0440)**	**3**	**Sequence that specifies the context for the Scheduled Protocol Code Sequence Item. One or more items may be included in this sequence.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
>>> Content Item Modifier Sequence	**(0040,0441)**	**3**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
…			
Performed Protocol Code Sequence	(0040,0260)	3	Sequence describing the Protocol performed for this Procedure Step. One or more Items may be included in this Sequence.
>Include 'Code Sequence Macro' Table 8.8-1		*No Baseline Context ID is defined.*	

>Protocol Context Sequence	**(0040,0440)**	**3**	**Sequence that specifies the context for the Performed Protocol Code Sequence Item. One or more items may be included in this sequence.**
>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	
>> Content Item Modifier Sequence	**(0040,0441)**	**3**	**Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.**
>>>Include 'Content Item Macro' Table 10-2		***No Baseline Template is defined.***	

Modify PS 3.4 Section F.7.2.1.1

Table F.7.2-1
MODALITY PERFORMED PROCEDURE STEP SOP CLASS N-CREATE, N-SET AND FINAL STATE ATTRIBUTES

Attribute Name	Tag	Req. Type N-CREATE (SCU/SCP)	Req. Type N-SET (SCU/SCP)	Requirement Type Final State (See Note 1)
…				
>Scheduled Protocol Code Sequence	(0040,0008)	2/2	Not allowed	
>>Code Value	(0008,0100)	1C/1 (Required if Sequence Item is present)	Not allowed	
>>Coding Scheme designator	(0008,0102)	1C/1 (Required if Sequence Item is present)	Not allowed	
>>Coding Scheme Version	(0008,0103)	3/3	Not allowed	
>>Code Meaning	(0008,0104)	3/3	Not allowed	
>>All other attributes from Scheduled Protocol Code Sequence		**3/3**	**Not allowed**	
…				
Performed Protocol Code Sequence	(0040,0260)	2/2	3/2	
>Code Value	(0008,0100)	1C/1 (Required if Sequence Item is present)	1C/1 (Required if Sequence Item is present)	

>Coding Scheme Designator	(0008,0102)	1C/1 (Required if Sequence Item is present)	1C/1 (Required if Sequence Item is present)	
>Coding Scheme Version	(0008,0103)	3/3	3/3	
>Code Meaning	(0008,0104)	3/3	3/3	
>All other attributes from Performed Protocol Code Sequence		**3/3**	**3/3**	
Performed Series Sequence	(0040,0340)	2/2	3/1	1 (See note 2)
…				

Modify PS 3.4 Section F.8.2.1.1

Table F.8.2-1
MODALITY PERFORMED PROCEDURE STEP RETRIEVE SOP CLASS N-GET ATTRIBUTES

Attribute Name	Tag	Requirement Type (SCU/SCP)
…		
>Scheduled Protocol Code Sequence	(0040,0008)	-/2
>>Code Value	(0008,0100)	-/1C (Required if Sequence Item is present)
>>Coding Scheme designator	(0008,0102)	-/1C (Required if Sequence Item is present)
>>Coding Scheme Version	(0008,0103)	-/3
>>Code Meaning	(0008,0104)	-/3
>>All other attributes from Scheduled Protocol Code Sequence		**-/3**
…		
Performed Protocol Code Sequence	(0040,0260)	3/2
>Code Value	(0008,0100)	-/1C (Required if Sequence Item is present)
>Coding Scheme Designator	(0008,0102)	-/1C (Required if Sequence Item is present)
>Coding Scheme Version	(0008,0103)	-/3
>Code Meaning	(0008,0104)	-/3

>All other attributes from Performed Protocol Code Sequence		**-/3**
All other attributes from Radiation Dose Module and Billing and Material Code Module		3/3

Modify PS 3.4 Section K.6.1.2.2

Table K.6-1
ATTRIBUTES FOR THE MODALITY WORKLIST INFORMATION MODEL

Description / Module	Tag	Matching Key Type	Return Key Type	Remark/Matching Type
…				
Scheduled Procedure Step Sequence	(0040,0100)	R	1	One or more Scheduled Procedure Steps for one Requested Procedure.
> …				
>Scheduled Protocol Code Sequence	(0040,0008)	O	1C	Either the Scheduled Procedure Step Description (0040,0005) or the Scheduled Protocol Code Sequence (0040,0008) or both shall be supported by the SCP. The Scheduled Protocol Code Sequence contains one or more Items.
>> …				
>>Protocol Context Sequence	**(0040,0440)**	**-**	**3**	**The Protocol Context Sequence and its Items shall not be used for matching**
>>>Value Type	**(0040,A040)**	**-**	**1**	
>>>Concept Name Code Sequence	**(0040,A043)**	**-**	**1**	
>>>>Code Value	**(0008,0100)**	**-**	**1**	
>>>>Coding Scheme Designator	**(0008,0102)**	**-**	**1**	
>>>>Coding Scheme Version	**(0008,0103)**	**-**	**3**	
>>>>Code Meaning	**(0008,0104)**	**-**	**1**	
>>>DateTime	**(0040,A120)**	**-**	**1C**	**Required if Value Type (0040,A040) is DATETIME.**
>>>Person Name	**(0040,A123)**	**-**	**1C**	**Required if Value Type (0040,A040) is PNAME.**
>>>Text Value	**(0040,A160)**	**-**	**1C**	**Required if Value Type (0040,A040) is TEXT.**

>>>Concept Code Sequence	**(0040,A168)**	**-**	**1C**	**Required if Value Type (0040,A040) is CODE.**
>>>>Code Value	**(0008,0100)**	**-**	**1**	
>>>>Coding Scheme Designator	**(0008,0102)**	**-**	**1**	
>>>>Coding Scheme Version	**(0008,0103)**	**-**	**3**	
>>>>Code Meaning	**(0008,0104)**	**-**	**1**	
>>>Numeric Value	**(0040,A30A)**	**-**	**1C**	**Required if Value Type (0040,A040) is NUMERIC.**
>>>Measurement Units Code Sequence	**(0040,08EA)**	**-**	**1C**	**Required if Value Type (0040,A040) is NUMERIC.**
>>>>Code Value	**(0008,0100)**	**-**	**1**	
>>>>Coding Scheme Designator	**(0008,0102)**	**-**	**1**	
>>>>Coding Scheme Version	**(0008,0103)**	**-**	**3**	
>>>>Code Meaning	**(0008,0104)**	**-**	**1**	
>>>All other attributes from Protocol Context Sequence		**-**	**3**	
…				

Modify PS 3.4 Section K.6.1.3

K.6.1.3.1 SCU Conformance

…
An implementation which conforms to the Modality Worklist SOP Class as an SCU shall state in its Conformance Statement whether it requests matching on Optional Matching Key Attributes. If it requests Type 3 Return Key Attributes, then it shall list these Optional Return Key Attributes. **It shall identify any Templates it supports for the Protocol Context Sequence.**
…

K.6.1.3.2 SCP Conformance

...
An implementation which conforms to the Modality Worklist SOP Class as an SCP shall state in its Conformance Statement whether it supports matching on Optional Matching Key Attributes. If it supports Type 3 Return Key Attributes, then it shall list the Optional Return Key Attributes which it supports. **It shall identify any Templates it supports for the Protocol Context Sequence.**
…

Add Data Element to PS 3.6 Section 6

(0040,0440)	**Protocol Context Sequence**	**SQ**	**1**
(0040,0441)	**Content Item Modifier Sequence**	**SQ**	**1**

Add reference in PS 3.16 Section 2

JJ1017 Guidelines for HIS, RIS, PACS – Modality Data Communication on Scheduling, Billing, and Examination Records, JJ1017 Version 1.1, Japan Industries Association of Radiological Systems (JIRA) and Japanese Association of Healthcare Information Systems Industry (JAHIS), November 15, 2001

Modify PS 3.16 Section 3

3.1.11 Template: A pattern that describes the Content Items, Value Types, Relationship Types and Value Sets that may be used in part of a Structured Report content tree, or in other ~~coded entry~~ **Content** Item **construct**s, such as Acquisition Context or ~~Waveform Channel Description~~ **Protocol Context**. Analogous to a Module of an Information Object Definition.

Modify PS 3.16 Section 6

…
An IOD may specify that particular Standard Templates shall be used or may be used to define or constrain the content of **a Content Item construct. A Content Item construct includes a coded concept name and one of several types of coded values. Content Item constructs are used in:**

the main Data Set and recursively nested Content Sequences (0040,A730) of the SR Document~~s~~ ~~or~~ **Content Module,**

the Acquisition Context **Sequence (0040,0555) of the Acquisition Context Module,**

the Protocol Context Sequence (0040,0440) and Content Item Modifier Sequence (0040,0441) of the Scheduled Procedure Step Module, Image Acquisition Results Module, and others.

Annex**es** A **and C** of this Part define~~s~~ Standard Templates.
…
Each Standard Template is specified by a Template table in this Part. Each Template table specifies exactly one Template, corresponding to ~~a type of SR Document or~~ a pattern of content within a~~n SR Document or Acquisition Context Module~~ **Content Item construct**.
…

6.1 Template Table field definition

…
Acquisition Context ~~and Waveform Channel Definition~~ Templates are described using tables of the following form:

TID #
Template Name

	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1						
2						
3						

Protocol Context Templates are described using tables of the following form:

TID #
Template Name

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1							
2							
3							

…

6.1.2 Nesting Level (NL)

…
Acquisition Context templates have no Nesting Level field. **Protocol Context templates allow a single Nesting Level implemented through the Content Item Modifier Sequence (see PS3.3).**

6.1.3 Relationship with Source Content Item (Parent)

…
Acquisition Context **and Protocol Context** templates have no Relationship field.

Modify PS 3.16 Annex C

Annex C Acquisition and Protocol Context Templates (Normative)

This Annex specifies the content of Templates for Acquisition **and Protocol** Context required by DICOM IODs.

Add Templates to PS 3.16 Annex C

TID 5100 Contrast Agent / Pre-Medication Protocol Context

This Template specifies medications to be administered prior to a diagnostic imaging protocol, imaging contrast agents to be used in the protocol, and/or bolus agents to be used in the protocol. Each medication or agent may be modified by a specified route of administration.

Type: Extensible

TID 5100
Contrast Agent / Pre-Medication Protocol Context

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	EV (123011, DCM, "Contrast/Bolus Agent")	1-n	U		BCID 12
2	>	CODE	EV (G-D100, SRT, "Route of Administration")	1	U		BCID 11
3		CODE	EV (123012, DCM, "Pre-Medication")	1-n	U		

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
4	>	CODE	EV (G-D100, SRT, “Route of Administration”)	1	U		BCID 11

TID 5101 NM/PET Protocol Context

Type: Extensible

TID 5101
NM/PET Protocol Context

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	EV (123001, DCM, “Radiopharmaceutical”)	1	M		BCID 25 (NM) or 4021 (PET)
2	>	CODE	EV (C-B1000, SRT, “Diagnostic Radioisotope)	1	U		BCID 18 (NM) or 4020 (PET)
3	>	DATETIME	EV (123003, DCM, “Radiopharmaceutical Start Time”)	1	U		
4	>	DATETIME	EV (123004, DCM, “Radiopharmaceutical Stop Time”)	1	U		
5	>	NUMERIC	EV (123005, DCM, “Radiopharmaceutical Volume”)	1	U		Units = DT(cm3, UCUM, “cm3”)
6	>	NUMERIC	EV (123006, DCM, “Radionuclide Total Dose”)	1	U		Units = DT(Bq, UCUM, “Bq”)
7	>	NUMERIC	EV (123007, DCM, “Radiopharmaceutical Specific Activity”)	1	U		Units = DT(Bq/mol, UCUM, “Bq/mol”)
8	>	CODE	EV (G-D100, SRT, “Route of Administration”)	1	U		BCID 11
9	>	NUMERIC	EV (123009, DCM, “Radionuclide Syringe Counts”)	1	U		Units = DT({counts}/s, UCUM “counts/s”)
10	>	NUMERIC	EV (123010, DCM, “Radionuclide Residual Syringe Counts”)	1	U		Units = DT({counts}/s, UCUM “counts/s”)

TID 5200 JJ1017 Protocol Context

This Template defines protocol context concepts to support the requirements of Japanese Guideline JJ1017. This is expected to be used with Scheduled or Performed Protocol Codes from Coding Scheme JJ1017T defined in Guideline JJ1017.

Type: Extensible

TID 5200
JJ1017 Protocol Context

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1		CODE	EV (123014, DCM, “Target Region”)	1	M		Baseline terms from Coding Scheme JJ1017P of JJ1017

	NL	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
2		CODE	EV (123015, DCM, “Imaging Direction”)	1	M		Baseline terms from Coding Scheme JJ1017D of JJ1017

Add Terms to PS 3.16 Annex D

Code Value	Code Meaning	Definition
123001	Radiopharmaceutical	Active ingredient (molecular) used for radioactive tracing
123003	Radiopharmaceutical Start Time	Time of radiopharmaceutical administration to the patient for imaging purposes
123004	Radiopharmaceutical Stop Time	Ending time of radiopharmaceutical administration to the patient for imaging purposes
123005	Radiopharmaceutical Volume	Volume of radiopharmaceutical administered to the patient
123006	Radionuclide Total Dose	Total amount of radionuclide administered to the patient at Radiopharmaceutical Start Time
123007	Radiopharmaceutical Specific Activity	Activity per unit mass of the radiopharmaceutical at Radiopharmaceutical Start Time
123009	Radionuclide Syringe Counts	Pre-injection syringe acquisition count rate
123010	Radionuclide Residual Syringe Counts	Syringe acquisition count rate following patient injection
123011	Contrast/Bolus Agent	Contrast or bolus agent
123012	Pre-Medication	Medication to be administered at the beginning of the Scheduled Procedure Step
123014	Target Region	Anatomic Region to be imaged
123015	Imaging Direction	Direction of imaging (includes view, transducer orientation, patient orientation, and/or projection)