Digital Imaging and Communications in Medicine (DICOM)

Supplement 233

Patient Model Gender Enhancements

*Prepared by:*

**DICOM Standards Committee, Working Group 6**

1300 N. 17th Street, Suite 900

Rosslyn, Virginia 22209 USA

Status: First Read

Developed pursuant to DICOM Work Item 2022-09-C

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# Document History

# Open Issues

|  |  |
| --- | --- |
| 5 | Can gender be required capability on Part 18 search? Should the resulting non-conforming past implementations be accepted? New actor created? Make it optional and deal with it by conformance claim? How would this search response payload?  Note: It must remain optional for MWL and UPS to avoid unacceptable backwards compatibility issues. The conformance claim may be updated to inform users about the gender related capabilities.  **Proposal: Do not change Part 18 requirements. Document optional extensions for new fields. Part 4 changes imply Part 18** |
| 8 | How should the comments on sex and gender attributes relate to the existing DICOM comments?  Comments on the Scheduled Procedure Step (0040,0400) is explicitly indicated as something to be displayed to the operator.  Requested Procedure Comments (0040,1400) is not so indicated.  **Proposal: Update the description of Patient Comments (0010,4000) to explicitly indicate potential use for sex-linked information. Patient Comments (0040,1400) is present in both the normalized and composite objects at patient, study, and procedure levels. See issue 28.** |
| 18 | Should we update Part 16 TID 1007, CID 7455 (which is mostly diagnostic codes and non-extensible) and/or CID 7457 (which is M, F, and extensible) to include gender codes? These are mostly diagnostic codes. This is a complex area that deserves separate review and development with significant clinical contribution and review. HL7 is treating this as out of scope for the Implementation Guide.  Proposal was to extend with the FHIR concepts for SPCU by adding terms to the DICOM Terminology. (This is instead of a complicated CP that was rejected to modify DICOM to use a DICOM reference to a FHIR Value Set definition as a coded terminology.)  **Proposal: Created DICOM terminology that uses FHIR definitions from the FHIR value set. (HL7 Vocab is in process for adding to the HL7 Terminology.)** |
| 22 | **TODO** Update PS3.2 Conformance as necessary  **ISSUE** Australia privacy regulations require a statement with justification for maintaining sex information in records. Will this be part of a conformance statement from DICOM, or put somewhere else by the vendor?  Should this be covered by having a section in the DCS for other regulations that are also complied with, e.g., GDPR, DIN, and UL? Should this be part of Supplement 209? These privacy regulation responses could go in such a section.  **Will conformance provide justification: NO,**  **Will conformance describe capability: MAYBE/YES**  **Proposal:** Leave the current wording that permits the writer of the conformance claim to determine how to describe relevant conformance. |
| 31 | Do any sex/gender based analytic results, e.g., BSA need revision to the related TID?  **Proposal:** TID 1007 Patient Context includes patient sex DCID 7455 and DCID 7455 has been updated. Are there any other changes needed? (Also, the attributes from Patient Study Module are part of the report IODs.) |
| 32 | Should DICOM try to capture reasons like “refused to answer” as distinct from missing with no reason provided? HL7 is using the various different kinds of missing and unknown as a coding for some of the sex and gender terms.  **Proposal:** The current text proposes these attributes as Type 3, so they may be missing, but missing does not convey any meaning regarding why they are missing. |
| 33 | Does the CDA template work result in any changes that are appropriate to DICOM TIDs?  **Proposal: This is still work in process in HL7 but it appears that no changes will be needed.** |
| 37 | A mix of upgraded and non-upgraded systems may result in a scenario in which one system, does not recognize sex attributes of the other. Priors are likely generated by non-upgraded systems. Search reliability may be negatively impacted when there is discrepant information (patient situation change, attributes within records have changed).  How is this handled? Are there DICOM changes needed to ameliorate this?  **Proposal**: The new attributes are Type 3, and the Type 3 rules are sufficient cover this. |
| 41 | Are there updates that should be considered for the DICOM Attribute Confidentiality constraint on patient data (0040,3001) to support local confidentiality approaches that may be applied to transgender and similar demographics changes?  **Proposal**: No. The confidentiality behavior for Patient Sex (0010,0040) is being used for all the new attributes. |
| 42 | Should “name to use” be PN or LT VR? A patient may want to be referred to as “Commander Bob”. DICOM PN does not specify which elements should be included. It has the components so that the rank of “Commander” and first name “Robert” can be present, but the desired string “Commander Bob” is not conveyed by the PN datatype.  HL7 v2.8 has extended XPN to have both the components and a text string element as part of the XPN. FHIR uses a structure that is similar to XPN, so that both the text string form and the components can be conveyed. HL7 v2.7 and earlier do not have the text string element.  **Proposal**: LT is chosen because PN does not specify which elements should be included, nor does it specify the order. |
|  |  |

# Closed Issues

|  |  |
| --- | --- |
| 1 | Should the conformance statement describe how sex/gender attributes are managed?  Yes, in terms of any applicable configuration support, but not in terms of imposing any policy choices. |
| 2 | **Duplicate of 26** |
| 3 | Should we add a gender CID into TID 1007 Subject Context, Patient? It has subject sex; does it also need a subject gender? We need to fix a conflict between description and CID.  The gender harmony model includes a partial list of gender identities proposed in various jurisdictions. It is unlikely that there will be a unified single list with internationally agreed definitions. It is likely that for some jurisdictions there will be recommended lists of gender identities.  Note: a gender CID has been created for the Patient’s Gender (0010,xxxx). The TID can reference that. The issue with many local extensions should be a note on the CID to warn implementers to expect local extensions.  ***Add a gender to TID 1007,*** |
| 4 | What should be done about CID 7457?  **NO changes.**  This is for small animals and groups of small animals where gender is not an issue. The current sex attributes are sufficient. |
| 6 | Are there any SOP classes that deserve creating a new SOP class where the new attributes are type 2?  **NO**. The new attributes are type 3 for all existing SOP classes. |
| 7 | How should HL7 FHIR codes be handled?  The proposal is   1. Use the minimum interoperable list from HL7 Implementation Guide as the basis for creating CIDs to the extent possible. 2. Where this is not possible, invent something specific for DICOM.   Some of attributes, such as Patient’s Gender (0010,xxxx) will have significant local extensions based on national and local policies.  See also issue 30 about how to encode HL7 codes  ***Write a separate CP (done)***  ***WG-06 March 2023***: Create DICOM Codes. There are problems with the HL7 Coding method, and these are well beyond the scope of the Sex and Gender supplement to resolve. For now, rather than force the HL7 coding system issues be resolved before we resolve Sup 233, create DICOM codes. |
| 9 | Should Patient Comments (0010,4000) be moved from C.7.1.1.1 Patient Module to C.7.2.2 Patient Study Module?  **NO**, never move existing attributes. But new attributes can be created in other modules. These may vary from study to study because they may reflect temporary, transient, or changed characteristics of the patient. That would make it more appropriate for comments on patient sex and gender that reflect changes. |
| 10 | What new attributes should be created to capture more specific sub-sets of genotypic and phenotypic parameters? Is this captured in an updated TID 1007? Should this be part of a later CP?  **No new attributes.** Proper diagnosis is much more than just adding diagnostic codes. This is not a problem for DICOM to solve. The comments and references can provide specific extra information needed by the operator and staff. If links to other medical records are appropriate, they can be included there. |
| 11 | How should the present models in open literature, implementations, etc. be reflected into DICOM Standard?  Copy bibliography in from HL7? Copy or reference various background information on HL7 Gender project site? (This stuff gets re-organized occasionally because it is a working group area, not a part of the standard that is subject to change control. Can we use DOI or something like it for more permanent references? Ask HL7 project team.)  Response:  **Put bibliography into Part 17 Annex**. |
| 12 | Do we provide instructions on what algorithm to pick for selecting sex or gender when the other is missing? What about other sex related instructions?  **NO**. It’s not DICOM’s responsibility or core competence. |
| 13 | ***Based on HL7 Implementation Guide ballot resolutions the DICOM module will not include the Recorded Sex and Gender (RSG) attributes.***  The RSG attributes are useful for some patient related administrative activities, but not for ordering or other imaging related activities. They are useful for:   1. Patient Identity confirmation 2. Billing activities 3. Patient reconciliation 4. Legal actions   If a need emerges for RSG attributes they can be added later by a CP. |
| 16 | All Supplements that are in progress need to be updated somehow. **This is not a comment issue. It’s a TODO.** |
| 14 | Is this a supplement or a CP? <wg-06 question, November 2019 meeting> <revised August 2022>  **Supplement 233** |
| 19 | Include both sex and gender, in both image IODs and workflow IODs?  **YES.** The Harmonized model is incorporated in Patient Modules and any IOD that incorporates these is affected. |
| 21 | The new attributes are proposed as type 3 so that they do not trigger creation of new SOP classes. They are a better fit to type 2 if the concept “attempted but failed to get a value” needs to be encoded. Is there a way to finesse this issue? Is it a problem if that concept cannot be encoded? Should a code value for this be added to the definition?  **Leave them type 3.** |
| 22 | **TODO** Update PS3.2 Conformance as necessary  **ISSUE** For example, Australia privacy regulations require a statement with justification for maintaining sex information in records. Will this be part of a conformance statement from DICOM, or put somewhere else by the vendor?  Should this be covered by having a section in the DCS for other regulations that are also complied with, e.g., GDPR, DIN, and UL? Should this be part of Supplement 209? These privacy regulation responses could go in such a section.  **Will Conformance provide justification etc.: NO, not required by DICOM (Tracking all the different laws and their changes is not practical or reasonable.)**  **Will conformance describe capability? MAYBE, up to the vendor** |
| 23. | Gender and other sexes for animals is not prohibited and not specifically addressed. Should this be addressed? (e.g., should freemartin be added?)  **No.** As coded values the veterinary users can extend locally, or add coded values to SNOMED, or as DICOM codes. This is a separate issue and can be dealt with by CP if necessary. |
| 24 | How should pronoun usage be addressed in this Supplement?  **Only English pronoun usage is addressed in this Supplement**. Pronoun usage issues are reasonably well understood for English, but not for other languages that use sex identifying pronouns. Some languages, e.g., Mandarin and Cantonese, do not traditionally use such pronouns, so it is a non-issue for them. Other languages have complex conjugation, declination, and other grammatical rules that apply to pronouns.  This could be addressed in a separate CP.  One use case for providing pronouns is so that they can be used in patient instructions, comments, and related discussions. The acquired images and structured reports are much less likely to include pronouns. |
| 25 | What should be done about Sex at Birth? See also issue 13.  **USE SPCU validity dates.** HL7 is recommending use of SPCU with a validity starting at birth, and possibly a second SPCU with a later validity start. |
| 26 | What VR should be used for Patient’s Gender (0010,xxx1)?  **The Patient’s Gender Identity (0010,xxx1) is encoded as a coded value**. There is only a minimal set of coded values defined by SNOMED and HL7.  There are many locally defined terms that are appropriate for gender identities. These may be official designations, local designations, or personal designations. These will be handled the same way other code system extensions are handled. |
| 27 | Can we duplicate Patient Comments into Patient Study Module? **NO**  There are other examples of the same attribute being present at the top level in multiple modules. In those cases the disambiguation of intent is either not needed or obvious. Can with do that with these comments? Can or should we do that for other attributes? |
| 28 | Are there problems with the same attribute in the Patient Module having different values in different studies? (Like Patient Weight, Patient Gender is subject to change.) This can be resolved by putting all the gender attributes in the Patient Study Module. Is that a problem?  **Ans:** All the attributes that are allowed to change between studies have been put into the Patient Study Module. C-FIND queries will need to adapt to this. |
| 29 | What should we do about Patient Sex (0010,0008)?  **Answer:** HL7 is leaving it very ambiguously defined and noting that the definition is basically up to the local policy of the system creating the value. New value sets and codes with better definitions are used in the new attributes.  DICOM usually takes the value from a hospital administrative system, so the same ambiguities will remain. |
| 30 | How will DICOM refer to codes defined in FHIR? This is a question for both WG-06 and WG-20 to decide whether this is a suitable encoding and will function appropriately.  See new CP, issue 7 (closed) |
| 34 | Technologist may be in a position to observe a discrepancy between the current medical record and “observed” information. Where and how is this communicated to other actors? Where and how is reconciliation performed?  Considerations include:   * Authoritative sources of observations * Official systems of record * See also IHE (Integrating the Healthcare Enterprise) Scheduled Workflow 34.4.2.2 Use Case #2: Patient Update in which upstream systems (ADT / RIS) perform a patient update or merge.   **Answer**: This is outside the scope of DICOM. It belongs to IHE or some other organization. |
| 35 | What imaging activities are affected by a discrepant observation, and how should those be handled prior to reconciliation (e.g. protocol selection, post processing, report content)?  **Answer:** No longer relevant with balloted HL7 implementation guide. |
| 36 | In the cross-community scenario:   1. How to manage the case if one jurisdiction does not recognize the sex/gender attributes of another? 2. What impact will the patient name change have on the Master Patient Index weighting of search results? 3. Is this likely to require a manual merge of records? (see IHE ITI-30)   **Answer**: This is outside the scope of DICOM. It belongs to IHE or some other organization. |
| 38 | How does the workflow change in an encounter-based activity? Consider direct in-person clinical care vs tele health? Does this result in changes to DICOM or the DICOM-HL7 mappings?  Proposal: This is not affected by Sex and Gender model, and thus need not be answered. |
| 39 | How to deal with the non-communicative patient? Does this affect DICOM? (This could introduce the HL7 notion of null flavors.)  **Answer:** The new attributes are all Type 3, and the existing Type 3 rules apply. |
| 40 | Some machine-based algorithms are tuned based on patient age and sex at birth for the application of established reference values. How should sex at birth be handled?  **Answer**: The HL7 recommendation for sex at birth is to employ valid period of SPCU, and that is the proposal for DICOM. (Note: this is for situations where sex at birth is clinically relevant. It is not for administrative uses.) |
| 43 | In this HL7 Implementation Guide Use Case, a single ADT message is created to communicate the patient name change. Is the order of the repeating elements in PID-5 significant? Should there be one ADT message or two (i.e. one message to communicate the new name, a second message to flag the old name as “NOUSE”)?  **Answer:** This issue is related to the DICOM example in the HL7 Implementation Guide, and does not affect the DICOM standard or this supplement. |
| 44 | To what degree should the DICOM Patient Study support all the attributes and elements of the logical model? I.e., multiple historical values with dates for the various concepts.  **Answer:** The RSG attribute is not proposed. The other attributes are included in the Patient Study Module and all of their elements and sub-attributes defined. All are optional. |
| 45 | Should we require an SPCU code (0010,xxx9) be present? Should this be optional in the sequence item?  The proposed structure deals with the issue of unknown SPCU (and all the related null flavors) by   1. Defining only codes for known describable SPCUs, and 2. Requiring a comment or URI reference for patients with no SPCU code. (Comment and URI references are also permitted when an SPCU code is present.) |
|  |  |

# Scope and Field

The HL7 Gender Harmony Project created a logical model ([**https://confluence.hl7.org/download/attachments/91996069/HL7\_GENDER\_R1\_I1\_2021JAN.pdf**](https://confluence.hl7.org/download/attachments/91996069/HL7_GENDER_R1_I1_2021JAN.pdf)**)** to describe the information needed in an electronic record to support proper care for gender and sex diverse patients. This includes both clinical information and social information. Further explanatory information can be found in the article “*Gender harmony: improved standards to support affirmative care of gender-marginalized people through inclusive gender and sex representation*” in Journal of the American Medical Informatics Association (JAMIA) (<https://doi.org/10.1093/jamia/ocab196>).

This logical model has driven normative changes to the HL7 standards. HL7 has published and balloted an Implementation Guide that applies to HL7v2, CDA, and FHIR. Each of those standards uses different formats and encodings. The changes to HL7v2, CDA, and FHIR are:

* HL7v2 adds segments, clarifies some existing elements like PID-8, and refers to the Implementation Guide in normative sections.
* CDA adds attributes, elements, and templates, clarifies some existing attributes, and refers to the Implementation Guide in normative sections.
* FHIR adds attributes, elements, codes, and extensions, clarifies some existing attributes, and refers to the Implementation Guide in normative sections.

This supplement makes changes to DICOM that are consistent with the logical model and the HL7 normative changes. These changes permit easy conversion between DICOM and the various HL7 standards.

* Adds optional attributes to the Patient Study Module and to various C-FIND services. These optional attributes match those in the HL7 logical model.
  + These optional attributes are defined starting with the definitions from FHIR and the HL7 Implementation Guide. There are also informative references to FHIR and the Implementation Guide.
  + Updates Patient Sex (0010,0040) description to match the HL-7 updated definition.
* Updates and adds some CIDs. The external codes in these CIDs are the same external codes as are used in HL7 v2, CDA, and FHIR. New codes are defined by DICOM to avoid some issues with referencing FHIR value set values directly.
* Clarifies use of Patient’s Sex (0010,0040).
* Provides examples of use of the optional attributes, and examples of some of the workflow and implementation considerations. These are accompanied by links to the related portions of HL7 v2, CDA, and FHIR published standards for examples of v2, CDA, and FHIR messages and contents.

# Part 3 PP

Update Part 3, Table C.2-3. Patient Demographic Module Attributes

### C.2.3 Patient Demographic Module

Table C.2-3 defines the Attributes relevant to generally describing a Patient at a specific point in time, e.g., at the time of admission.

Table C.2-3. Patient Demographic Module Attributes

|  |  |  |
| --- | --- | --- |
| Attribute Name | Tag | Attribute Description |
| Patient's Sex | (0010,0040) | Sex of the named Patient.  Enumerated Values:  **M** male  **F** female  **O** other |
| **Gender Identity Sequence** | **(0010,xxxx)** | **Patient Gender Identities that apply to this patient.**  **One or more items are permitted in this Sequence.** |
| **>Gender Code Sequence** | **(0010,xxx4)** | **A specific gender code.**  **See also section C.7.2.2.1.x**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx1 Person Gender** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Gender Comment** | **(0010,xxx8)** | **Description of gender identity and when it should be used.** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **Sex Parameters for Clinical Use that apply to this patient.**  **See also section C.7.2.2.1.x2**  **One or more items are permitted in this Sequence.** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **Sex Parameters for Cinical Use (SPCU)**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx2 Sex Parameters for Clinical Use** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>SPCU Comment** | **(0010,xxx1)** | **Further description of clinical implications and reasons for the selected code.** |
| **>SPCU Reference** | **(0010,xx10)** | **URI references that explain, extend, or justify the SPCU** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **Names to be used or that have been used when talking with or discussing this person.**  **One or more items are permitted in this Sequence.** |
| **>Name to use** | **(0010,xx12)** | **A name to be used when talking with or discussing this person.**  **This need not be an official name nor comply with any particular name structure.** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Name to Use Comment** | **(0010,xx13)** | **Further explanation of proper name usage** |
| **Third person pronoun Sequence** | **(0010,xx21)** | **Pronoun(s) to be used for this person**  **One or more items are permitted in this sequence.** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **Pronoun**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx4 Third Person Pronouns.** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Pronoun Comment** | **(0010,xx23)** | **Further explanation of pronoun usage** |

Update Part 3, Table C.4-13. Performed Procedure Step Relationship Module Attributes

### C.4.13 Performed Procedure Step Relationship

Table C.4-13 specifies the Attributes used to reference other SOP Classes and other Information Entities of the DICOM real-world model as defined in Section 7.3.1.6.

Table C.4-13. Performed Procedure Step Relationship Module Attributes

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Tag** | **Attribute Description** |
| Patient's Sex | (0010,0040) | Sex of the named Patient.  Enumerated Values:  **M** male  **F** female  **O** other |
| **Gender Identity Sequence** | **(0010,xxxx)** | **Patient Gender Identities that apply to this patient.**  **One or more items are permitted in this Sequence.** |
| **>Gender Code Sequence** | **(0010,xxx4)** | **A specific gender code.**  **See also section C.7.2.2.1.x**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx1 Person Gender** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Gender Comment** | **(0010,xxx8)** | **Description of gender identity and when it should be used.** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **Sex Parameters for Clinical Use that apply to this patient.**  **See also section C.7.2.2.1.x2**  **One or more items are permitted in this Sequence.** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **A specific sex parameter for clinical use**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx2 Sex Parameter for Clinical Use** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>SPCU Comment** | **(0010,xxx1)** | **Further description of clinical implications and reasons for the selected code.** |
| **>SPCU Reference** | **(0010,xx10)** | **URI reference that explains, extends, or justifies the SPCU** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **Names to be used or that have been used when talking with or discussing this person.**  **One or more items are permitted in this Sequence.** |
| **>Name to use** | **(0010,xx12)** | **A name to be used when talking with or discussing this person.**  **This need not be an official name nor comply with any particular name structure.** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Name to Use Comment** | **(0010,xx13)** | **Further explanation of proper name usage** |
| **Third person pronoun Sequence** | **(0010,xx21)** | **Pronoun(s) to be used for this person**  **One or more items are permitted in this sequence.** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **A Pronoun to be used.**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | **DCID CIDxxx4 Third Person Pronouns.** |
| **>Effective Start Time** | **(0010,xxx6)** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **This item is applicable before this time.** |
| **>Pronoun Comment** | **(0010,xx23)** | **Further explanation of pronoun usage** |

Update Part 3, Table C.7-1 Patient Module Attributes

### C.7.1 Common Patient IE Modules

#### C.7.1.1 Patient Module

Table C.7-1 specifies the Attributes of the Patient that describe and identify the Patient who is the subject of a Study. This Module contains Attributes of the Patient that are needed for interpretation of the Composite Instances and are common for all Studies performed on the Patient. It contains Attributes that are also included in the Patient Modules in Section C.2.

Table C.7-1. Patient Module Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Patient's Sex | (0010,0040) | 2 | Sex of the named Patient.  Enumerated Values:  **M** male  **F** female  **O** other |
| …. |  |  |  |

**Notes: 1. In accordance with the DICOM Information Model, the value of Patient's Sex (0010,0040) is required to be the same for all studies performed on the patient. If a patient sex change occurs, then the Patient’s Sex (0010,0040) attribute may be updated in all SOP instances in all studies to reflect that change. (The policies and mechanisms for such updates are outside the scope of DICOM). There are other sex and gender related attributes that are in the Patient Study Module (see C.7.2.2) for which this constraint does not apply because they are permitted to be different in different studies.**

**2. Patient's Sex (0010,0040) reflects the documentation policies of the local administration for the sex attributes of the patient. It is related to the Sex Parameters for Clinical Use Sequence (0010,xxx2) and might be used when the Sex Parameters for Clinical Use Sequence (0010,xxx2) is not present. It is often populated based on the PID-8 field in an HL7v2 message, and thus may follow the HL7v2 rules that defer this decision to the local administration.**

Update Part 3, Table C.7-4a Patient Study Module Attributes – add attributes

#### C.7.2.2 Patient Study Module

Table C.7-4a defines Attributes that provide information about the Patient at the time the Study started.

Note**s 1.** In the case of imaging a group of small animals simultaneously, the Attributes in this Module can only have values that apply to the entire group.

**2.** **The HL7 Informative Document: Gender Harmony - Modeling Sex and Gender Representation, Release 1 provides additional background on sex and gender related concepts used in this table (**[**http://www.hl7.org/implement/standards/product\_brief.cfm?product\_id=564**](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=564)**).**

Table C.7-4a. Patient Study Module Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| … |  |  |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3** | **Gender Identities that are chosen by the patient.**  **One or more items are permitted in this Sequence.** |
| **>Gender Identity Code Sequence** | **(0010,xxx4)** | **1** | **A coded description of gender identity.**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx1 Person Gender Identity** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>Gender Identity Comment** | **(0010,xxx8)** | **3** | **Comments on this gender identity, such as the context in which it should be used.** |
| **Clinical Parameter Selection Constraint Sequence** | **(0010,xxx2)** | **3** | **Clinical parameter that are selected based on sex information about the patient.**  **See section C.7.2.2.1.x2**  **One or more items are permitted in this Sequence.** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **1** | **A clinical parameter, or constraints on selecting appropriate clinical parameter values.**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx2 Sex Parameters for Clinical Use** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>SPCU Comment** | **(0010,xxx1)** | **3** | **Further description of clinical implications and reasons for the selected parameter.** |
| **>SPCU Reference** | **(0010,xx10)** | **3** | **Reference to a resource that explains or extends the selected parameter.** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3** | **Names for addressing or discussing this patient.**  **One or more items are permitted in this Sequence.** |
| **>Name to Use** | **(0010,xx12)** | **1** | **A name to be used when addressing or discussing this patient.**  **See C.7.2.2.1.a.** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>Name to Use Comment** | **(0010,xx13)** | **3** | **Further explanation of appropriate name usage** |
| **Third Person Pronoun Sequence** | **(0010,xx21)** | **3** | **Pronoun sets for discussing this patient.**  **One or more items are permitted in this sequence.** |
| **>Pronoun Code Sequence** | **(0010,xx22)** | **1** | **Pronoun set to be used when discussing this patient.**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx4 Third Person Pronoun Sets.** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is effective after at this time.**  **See C.7.2.2.1.b** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is effective before this time.**  **See C.7.2.2.1.b** |
| **>Pronoun Comment** | **(0010,xx23)** | **3** | **Further explanation of pronoun usage** |
| **…** |  |  |  |

Add sections to C.7.2.2 Patient Study Module

###### C.7.2.2.1.x2 Sex Parameters for Clinical Use Sequence

The Sex Parameters for Clinical Use Sequence (0010,xxx2) contains one or more values used to determine sex-related patient parameters that are clinically relevant to this study and guide how settings or reference ranges apply to this patient. These may be reference ranges, procedure setup, diagnostic algorithm parameters, etc.

Each sequence item has an SPCU code (0010,xxx9) such as female-typical. When multiple items are present, one item might indicate that the patient should be treated as part of a male-typical reference population, and another indicate that the patient should be treated as part of a female-typical reference population.

###### C.7.2.2.1.y Patient's Gender Identity Sequence

The Gender Identity Sequence (0010,xxxx) describes elements of an individual's personal sense of being a man, woman, or something else. Each item describes one gender identity chosen by this person. In some cultures or situations there may be more than one Gender Identity Sequence item for a person. The Gender Comment (0010,xxx8) may be used to indicate how a patient with multiple gender identity items should be treated. For example, the patient may have disclosed one gender identity to a small group of friends and healthcare staff, while using the other identity for everyone else.

Note: 1. Patient's Sex (0010,0040) reflects the sex assignment policies of the local administration. It is related to the Gender Identity Sequence (0010,xxx1) and might be used as a substitute when the Gender Identity Sequence (0010,xxx1) is not present.

2. If the patient (such as a fetus or infant) is unable to express a gender identity this sequence will likely be absent but might be recorded as unknown.

###### C.7.2.2.1.a Name to Use

The Name to Use (0010,xx12) need not be an official name of any sort, nor does it need to comply with any standard naming structure. It is the name chosen for social interactions.

Note: The Value Representation of this attribute is a long text string (LT) rather than a person name (PN) to avoid confusion about the proper combination of elements. The person name Value Representation does not provide a mechanism to indicate whether a person wants to be addressed as “John Doe”, “Mr. Doe”, “Sergeant Doe”, or “John” when all of these elements are part of the PN value.

###### C.7.2.2.1.b Effective Start Time and Effective Stop Time

Each sequence item may have an Effective Start Time (0010,xxx6) and Effective Stop Time (0010,xxx7) specifying the time interval during which this code applies. These specify when this item applies to the patient. When multiple items are present, one item might indicate the value that was applicable at time of birth, and another indicate the value that is currently applicable. For example, a male at birth with subsequent orchiectomy for testicular cancer could have a “male-typical” at birth and a “specified” after the orchiectomy.

Update Part 3, Table C.30.4-1. Unified Procedure Step Relationship Module Attributes

### C.30.4 Unified Procedure Step Relationship Module

Table C.30.4-1 specifies the Attributes that describe the relationship of a Unified Procedure Step (UPS).

Table C.30.4-1. Unified Procedure Step Relationship Module Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Patient's Sex | (0010,0040) | 2 | Sex of the named Patient.  Enumerated Values:  **M** male  **F** female  **O other** |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3** | **Patient Gender Identities that apply to this patient.**  **One or more items are permitted in this Sequence.** |
| **>Gender Code Sequence** | **(0010,xxx4)** | **1** | **A specific gender code.**  **See section C.7.2.2.1.x**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx1 Person Gender** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>Gender Comment** | **(0010,xxx8)** | **3** | **Description of gender identity and when it should be used.** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **3** | **Sex Parameters for Clinical Use that apply to this patient.**  **See section C.7.2.2.1.x2**  **One or more items are permitted in this Sequence.** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **1** | **A specific sex parameter for clinical use**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx2 Sex Parameters for Clinical Use** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>SPCU Comment** | **(0010,xxx1)** | **3** | **Further description of clinical implications and reasons for the selected code.** |
| **>SPCU Reference** | **(0010,xx10)** | **3** | **URI reference that explains, extends, or justifies the SPCU** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3** | **Names to be used or that have been used when talking with or discussing this person.**  **One or more items are permitted in this Sequence.** |
| **>Name to use** | **(0010,xx12)** | **1** | **A name to be used when talking with or discussing this person.**  **This need not be an official name nor comply with any particular name structure.** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>Name to Use Comment** | **(0010,xx13)** | **3** | **Further explanation of proper name usage** |
| **Third person pronoun Sequence** | **(0010,xx21)** | **3** | **Pronoun(s) to be used for this person**  **One or more items are permitted in this sequence.** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **1** | **Pronoun**  **Only a single item shall be included in this Sequence.** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | | **DCID CIDxxx4 Third Person Pronouns.** |
| **>Effective Start Time** | **(0010,xxx6)** | **3** | **This item is applicable after at this time.** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3** | **This item is applicable before this time.** |
| **>Pronoun Comment** | **(0010,xx23)** | **3** | **Further explanation of pronoun usage** |
| … |  |  |  |

# Part 4

### C.6.1 Patient Root SOP Class Group

…

Table C.6-1 is not changed. These attributes are included for contextual use by the reviewers.

Table C.6-1. Patient Level Attributes for the Patient Root Query/Retrieve Information Model

|  |  |  |
| --- | --- | --- |
| Attribute Name | Tag | Type |
| Patient's Sex | (0010,0040) | O |
| Other Patient IDs Sequence | (0010,1002) | O |

Table C.6-2. Study Level Keys for the Patient Root Query/Retrieve Information Model

| Attribute Name | Tag | Type | | Return Key Type | Remark |
| --- | --- | --- | --- | --- | --- |
| Study Date | (0008,0020) | R | | **2** |  |
| Study Time | (0008,0030) | R | | **2** |  |
| Accession Number | (0008,0050) | R | | **2** |  |
| Study ID | (0020,0010) | R | | **2** |  |
| Study Instance UID | (0020,000D) | U | | **1** |  |
| Modalities in Study | (0008,0061) | O | | **3** |  |
| SOP Classes in Study | (0008,0062) | O | | **3** |  |
| Anatomic Regions in Study Code Sequence | (0008,0063) | O | | **3** |  |
| *>Include* [*Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*](file:///C:\Users\rjhor\AppData\Local\Temp\Tempf62c838a-a2cb-4e5c-ad53-81544ef6597e_DocBookDICOM2023d_release_docx_20230908073327.zip\output\docx\part04.docx#table_C_6_2a) | | | | | |
| Referring Physician's Name | (0008,0090) | O | | **3** |  |
| Study Description | (0008,1030) | O | | **3** |  |
| Procedure Code Sequence | (0008,1032) | O | | **3** |  |
| *>Include* [*Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*](file:///C:\Users\rjhor\AppData\Local\Temp\Tempf62c838a-a2cb-4e5c-ad53-81544ef6597e_DocBookDICOM2023d_release_docx_20230908073327.zip\output\docx\part04.docx#table_C_6_2a) | | | | | |
| Name of Physician(s) Reading Study | (0008,1060) | O | | **3** |  |
| Admitting Diagnoses Description | (0008,1080) | O | | **3** |  |
| Referenced Study Sequence | (0008,1110) | O | | **3** |  |
| >Referenced SOP Class UID | (0008,1150) | O | | **3** |  |
| >Referenced SOP Instance UID | (0008,1155) | O | | **3** |  |
| Patient's Age | (0010,1010) | O | | **3** |  |
| Patient's Size | (0010,1020) | O | | **3** |  |
| Patient's Weight | (0010,1030) | O | | **3** |  |
| Occupation | (0010,2180) | O | | **3** |  |
| Additional Patient History | (0010,21B0) | O | | **3** |  |
| Other Study Numbers | (0020,1070) | O | | **3** |  |
| Study Update DateTime | (0008,041F) | O | | **3** |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | | **O** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | | **R** | **1** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** | **1C** | **Required if present** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | | **R** |  |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | | **O** |  |  |
| **>Name to use** | **(0010,xx12)** | | **O** |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | | **R** |  |  |
| ***>>* *Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |

Update Part 4, Table C.6-5

### C.6.2 Study Root SOP Class Group

Table C.6-5. Study Level Keys for the Study Root Query/Retrieve Information Model

| Attribute Name | Tag | Type | | Return Key Type | Remark |
| --- | --- | --- | --- | --- | --- |
| Study Date | (0008,0020) | R | | **2** |  |
| Study Time | (0008,0030) | R | | **2** |  |
| Accession Number | (0008,0050) | R | | **2** |  |
| Patient's Name | (0010,0010) | R | | **2** |  |
| Patient ID | (0010,0020) | R | | **2** |  |
| Study ID | (0020,0010) | R | | **2** |  |
| Study Instance UID | (0020,000D) | U | | **1** |  |
| Modalities in Study | (0008,0061) | O | | **3** |  |
| SOP Classes in Study | (0008,0062) | O | | **3** |  |
| Anatomic Regions in Study Code Sequence | (0008,0063) | O | | **3** |  |
| >Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys” | | | | | | |
| Referring Physician's Name | (0008,0090) | O | | **3** |  |
| Study Description | (0008,1030) | O | | **3** |  |
| Procedure Code Sequence | (0008,1032) | O | | **3** |  |
| >Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys” | | | | | | |
| Name of Physician(s) Reading Study | (0008,1060) | O | | **3** |  |
| Admitting Diagnoses Description | (0008,1080) | O | | **3** |  |
| Referenced Study Sequence | (0008,1110) | O | | **3** |  |
| >Referenced SOP Class UID | (0008,1150) | O | | **3** |  |
| >Referenced SOP Instance UID | (0008,1155) | O | | **3** |  |
| Referenced Patient Sequence | (0008,1120) | O | | **3** |  |
| >Referenced SOP Class UID | (0008,1150) | O | | **3** |  |
| >Referenced SOP Instance UID | (0008,1155) | O | | **3** |  |
| Issuer of Patient ID | (0010,0021) | O | | **3** |  |
| Patient's Birth Date | (0010,0030) | O | | **3** |  |
| Patient's Birth Time | (0010,0032) | O | | **3** |  |
| Patient's Sex | (0010,0040) | O | | **2** |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | | **O** |  |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | | **R** |  |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | | **R** |  |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | | **O** |  |  |
| **>Name to use** | **(0010,xx12)** | | **O** |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | | **R** |  |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | |  |  |
| **>Effective Start Time** | **(0010,xxx6)** | | **O** |  |  |
| **>Effective Stop Time** | **(0010,xxx7)** | | **O** |  |  |
| Other Patient IDs Sequence | (0010,1002) | O | | **3** |  |
| Other Patient Names | (0010,1001) | O | | **3** |  |
| Patient's Age | (0010,1010) | O | | **3** |  |
| Patient's Size | (0010,1020) | O | | **3** |  |
| Patient's Weight | (0010,1030) | O | | **3** |  |
| Ethnic Group | (0010,2160) | O | | **3** |  |
| Occupation | (0010,2180) | O | | **3** |  |
| Additional Patient History | (0010,21B0) | O | | **3** |  |
| Patient Comments | (0010,4000) | O | | **3** |  |
| *All other Attributes at Study Level* | Tag | O | | **3** |  |

…

Update Part 4, Table F.7.2-1

### F.7.2 Operations

…

##### F.7.2.1.1 Modality Performed Procedure Step Subset Specification

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)** |
| … |  |  |  |  |
| Patient’s Sex | (0010,0040) | 2/2 | Not Allowed |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3/3** | **Not Allowed** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **1/1** | **Not Allowed** |  |
| ***>>Include Table F.7.2-1a. Modality Performed Procedure Step Enhanced Code Value Macro with no N-SET*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **3/3** | **Not Allowed** |  |
| ***>>Include Table F.7.2-1a. Modality Performed Procedure Step Enhanced Code Value Macro with no N-SET*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** | **Not Allowed** |  |
| **>Name to use** | **(0010,xx12)** | **1/1** | **Not Allowed** |  |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **1/1** | **Not Allowed** |  |
| ***>>*** ***Include Table F.7.2-1a. Modality Performed Procedure Step Enhanced Code Value Macro with no N-SET*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |

Update Part 4, Table F.8.2-1 Modality Performed Procedure Step Retrieve SOP Class N-GET Attributes

### F.8.2 Operations

Table F.8.2-1. Modality Performed Procedure Step Retrieve SOP Class N-GET Attributes

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Tag** | **Req. Type (SCU/SCP)** |
| … |  |  |
| Patient’s Sex | (0010,0040) | 3/2 |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3/3** |
| **>Gender Code Sequence** | **(0010,xxx4)** | **1/1** |
| ***>>Include Table 8-2a. “Enhanced Coded Entry Macro with Optional Matching Key Support and Optional Meaning”*** | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **3/3** |
| ***>>Include Table 8-2a. “Enhanced Coded Entry Macro with Optional Matching Key Support and Optional Meaning”*** | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** |
| **>Name to use** | **(0010,xx12)** | **1/1** |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** |
| **>Effective Stop Time** | **(0010,xxx7)** | **3/3** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **1/1** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | |
| **>Effective Start Time** | **(0010,xxx6)** | **3/3** |
| **>Effective Stop Time** | **(0010,xxx7)** |  |

Update Part 4, Table K.6-1. Attributes for the Modality Worklist Information Model

### K.6.1 Modality Worklist SOP Class

Table K.6-1. Attributes for the Modality Worklist Information Model

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description / Module** | **Tag** | **Matching Key Type** | **Return Key Type** | **Remark/Matching Type** |
| … |  |  |  |  |
| Patient’s Sex | (0010,0040) | O | 2 |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **O** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **R** | **1** |  |
| ***>>Include Table C.8-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **SPCU** |  |  |  |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **R** | **1C** | **Required if present** |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>SPCU Comment** | **(0010,xxx1)** | **O** | **1C** | **Required if present** |
| **>SPCU Reference** | **(0010,xx10)** | **O** | **1C** | **Required if present** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** | **3** |  |
| **>Name to use** | **(0010,xx12)** | **O** | **1** |  |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Name to Use Comment** | **(0010,xx13)** | **O** | **1C** | **Required if present** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** | **3** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **R** | **1** |  |
| ***>>* *Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Pronoun Comment** | **(0010,xx23)** | **O** | **1C** | **Required if present** |
| **…** |  |  |  |  |

Update Part 4, Table Q.4-1. Attributes for the Relevant Patient Information Model

### Q.4.3 Relevant Patient Information Model SOP Classes

…

Table Q.4-1. Attributes for the Relevant Patient Information Model

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description / Module** | **Tag** | **Matching Key Type** | **Return Key Type** | **Remark/Matching Type** |
| … |  |  |  |  |
| Patient’s Sex | (0010,0040) | - | 2 |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **O** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **R** | **1** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Gender Comment** | **(0010,xxx8)** | **O** | **1C** | **Required if present in matching instance** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **O** | **3** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **R** | **1C** | **Required if present in matching instance** |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>SPCU Comment** | **(0010,xxx1)** | **O** | **1C** | **Required if present in matching instance** |
| **>SPCU Reference** | **(0010,xx10)** | **O** | **1C** | **Required if present in matching instance** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** | **3** |  |
| **>Name to use** | **(0010,xx12)** | **R** | **1** |  |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Name to Use Comment** | **(0010,xx13)** | **O** | **1C** | **Required if present in matching instance** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** | **3** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **R** | **1** |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Pronoun Comment** | **(0010,xx23)** | **O** | **1C** | **Required if present in matching instance** |
| **…** |  |  |  |  |

Update Part 4, Table V.6-2. Attributes for the Substance Approval Query Information Model

### V.6.2 Substance Approval Query SOP Class

…

Table V.6-2. Attributes for the Substance Approval Query Information Model

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description / Module** | **Tag** | **Matching Key Type** | **Return Key Type** | **Remark/Matching Type** |
| Patient’s Sex | (0010,0040) | - | 2 |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **O** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **R** | **1** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Gender Comment** | **(0010,xxx8)** | **RC** | **1C** | **Required if present in matching instance** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **O** | **3** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **RC** | **1C** | **Required if present in matching instance** |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>SPCU Comment** | **(0010,xxx1)** | **RC** | **1C** | **Required if present in matching instance** |
| **>SPCU Reference** | **(0010,xx10)** | **RC** | **1C** | **Required if present in matching instance** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** | **3** |  |
| **>Name to use** | **(0010,xx12)** | **R** | **1** |  |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Name to Use Comment** | **(0010,xx13)** | **RC** | **1C** | **Required if present in matching instance** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** | **3** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **R** | **1** |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **O** | **1C** | **Required if present** |
| **>Effective Stop Time** | **(0010,xxx7)** | **O** | **1C** | **Required if present** |
| **>Pronoun Comment** | **(0010,xx23)** | **RC** | **1C** | **Required if present in matching instance** |
| **…** |  |  |  |  |

Update Table CC.2.5-3. UPS SOP Class N-CREATE/N-SET/N-GET/C-FIND Attributes

### CC.2.5 Create a Unified Procedure Step (N-CREATE)

…

Table CC.2.5-3. UPS SOP Class N-CREATE/N-SET/N-GET/C-FIND Attributes

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Tag** | **Req. Type N-CREATE (SCU/SCP)** | **Req. Type N-SET (SCU/SCP)** | **Final State** | **Req. Type N-GET (SCU/SCP)** | **Match Key Type** | **Return Key Type** | **Remark/Matching Type** |
| … |  |  |  |  |  |  |  |  |
| Patient’s Sex | (0010,0040) | 2/2 | Not Allowed | O | 3/2 | R | 2 |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **1/1** | **Not Allowed** | **O** | **1/1** | **R** | **1** |  |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Effective Stop Time** | **(0010,xxx7)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Gender Comment** | **(0010,xxx8)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **3** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **3/3** | **Not Allowed** | **O** | **3/3** | **R** | **1C** | **Required if present in matching instance** |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Effective Stop Time** | **(0010,xxx7)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>SPCU Comment** | **(0010,xxx1)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **1C** | **Required if present in matching instance** |
| **>SPCU Reference** | **(0010,xx10)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **1C** | **Required if present in matching instance** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **3** |  |
| **>Name to use** | **(0010,xx12)** | **1/1** | **Not Allowed** | **O** | **1/1** | **R** | **1** |  |
| **>Effective Start Time** | **(0010,xxx6)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Effective Stop Time** | **(0010,xxx7)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Name to Use Comment** | **(0010,xx13)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **1C** | **Required if present in matching instance** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **3** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **1/1** | **Not Allowed** | **O** | **1/1** | **R** | **1C** | **Required if present in matching instance** |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Effective Start Time** | **(0010,xxx6)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Effective Stop Time** | **(0010,xxx7)** | **1C/1C** | **Not Allowed** | **O** | **1C/1C** | **O** | **1C** | **Required if present in matching instance** |
| **>Pronoun Comment** | **(0010,xx23)** | **3/3** | **Not Allowed** | **O** | **3/3** | **O** | **1C** | **Required if present in matching instance** |

# Part 6

Update Part 6, Table 6-1. Registry of DICOM Data Elements

Table 6-1. Registry of DICOM Data Elements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tag | Name | Keyword | VR | VM |
| (0010,xxxx) | Gender Identity Sequence |  | SQ | 1 |
| (0010,xxx1) | SPCU Comment |  | LT | 1..n |
| (0010,xxx2) | Sex Parameters for Clinical Use Sequence |  | SQ | 1 |
| (0010,xxx3) | Patient Name to Use Sequence |  | SQ | 1 |
| (0010,xxx4) | Gender Code Sequence |  | SQ | 1 |
| (0010,xxx6) | Effective Start Time |  | DT | 1 |
| (0010,xxx7) | Effective Stop Time |  | DT | 1 |
| (0010,xxx8) | Gender Comment |  | LT | 1..n |
| (0010,xxx9) | SPCU Code Sequence |  | SQ | 1 |
| (0010,xx10) | SPCU Reference |  | URI | 1..n |
| (0010,xx11) | Patient Name to Use |  | LT | 1 |
| (0010,xx13) | Name to Use Comment |  | LT | 1..n |
| (0010,xx14) | Recorded Sex or Gender Sequence |  | SQ | 1 |
| (0010,xx15) | Recorded Value Code Sequence |  | SQ | 1 |
| (0010,xx16) | Identity Type Code Sequence |  | SQ | 1 |
| (0010,xx17) | Acquisition Datetime |  | DT | 1 |
| (0010,xx18) | Jurisdiction |  | LT | 1 |
| (0010,xx19) | Source Field Name |  | LT | 1 |
| (0010,xx20) | Source Field Definition |  | LT? URI? | 1 |
| (0010,xx21) | Third Person Pronouns Sequence |  | SQ | 1 |
| (0010,xx22) | Pronoun Code Sequence |  | SQ | 1 |
| (0010,xx23) | Pronoun Comment |  | LT | 1..n |
| (0010,xx24) | International Equivalent Code Sequence |  | SQ | 1 |
| (0010,xx26) | Source Document Reference |  | URI | 1 |
| (0010,xx27) | Period of Applicability |  | DT | 2 |

Update Part 15 Table E.1-1. Application Level Confidentiality Profile Attributes

# Part 15

## E.1 APPLICATION LEVEL CONFIDENTIALITY PROFILES

….

Table E.1-1. Application Level Confidentiality Profile Attributes

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Attribute Name | Tag | Retd. (from [PS3.6](http://dicom.nema.org/medical/dicom/current/output/chtml/part06/PS3.6.html)) | In Std. Comp. IOD (from [PS3.3](http://dicom.nema.org/medical/dicom/current/output/chtml/part03/PS3.3.html)) | Basic Prof. | Rtn. Safe Priv. Opt. | Rtn. UIDs Opt. | Rtn. Dev. Id. Opt. | Rtn. Inst. Id. Opt | Rtn. Pat. Chars. Opt. | Rtn. Long. Full Dates Opt. | Rtn. Long. Modif. Dates Opt. | Clean Desc. Opt. | Clean Struct. Cont. Opt. | Clean Graph. Opt. |
| Patient’s Sex | (0010,0040) | N | Y | Z |  |  |  |  | K |  |  |  |  |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **N** | **Y** | **X** |  |  |  |  | **K** |  |  |  |  |  |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **N** | **Y** | **X** |  |  |  |  | **K** |  |  |  |  |  |
| **Person Names to Use Sequence** | **(0010,xx12)** | **N** | **Y** | **X** |  |  |  |  | **K** |  |  |  |  |  |
| **Recorded Sex or Gender Sequence** | **(0010,xx14)** | **N** | **Y** | **X** |  |  |  |  | **K** |  |  |  |  |  |
| **Third Person Pronoun Sequence** | **(0010,xx21)** | **N** | **Y** | **X** |  |  |  |  | **K** |  |  |  |  |  |

# Part 16

Update CID 7455 Sex

### CID 7455 Sex

This Context Group includes terms for the finding of sex of a subject for clinical purposes, such as selection of sex-based growth metrics.

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Type: Non-Extensible**

**Version: 20040112**

**UID: 1.2.840.10008.6.1.519**

Table CID 7455. Sex

|  |  |  |  |
| --- | --- | --- | --- |
| Coding Scheme Designator | Code Value | Code Meaning | Patient Sex (0010,0040) Equivalent |
| DCM | M | Male | M |
| DCM | F | Female | F |
| DCM | U | Unknown Sex |  |
| DCM | MP | Male Pseudohermaphrodite |  |
| DCM | FP | Female **~~Pseudohermaphtodite~~**  **Pseudohermaphrodite** |  |
| DCM | H | Hermaphrodite |  |
| DCM | MC | Male changed to Female |  |
| DCM | FC | Female changed to Male |  |
| DCM | 121104 | Ambiguous Sex |  |
| DCM | 121102 | Other Sex |  |
| DCM | 121103 | Undetermined Sex | O |
| **DCM** | **Sup233-01** | **Female-typical** | **F** |
| **DCM** | **Sup233-02** | **Male-typical** | **M** |
| **DCM** | **Sup233-03** | **Specified** | **O** |

Note

1. These terms are distinct from the gender of a subject for administrative purposes, although the default value for clinical sex is often based on the administrative gender (e.g., see TID 1007 “Subject Context, Patient”). The administrative value "O" from Patient's Sex (0010,0040) maps by default to "undetermined" for clinical purposes.

2. This Context Group in a prior edition of the Standard included codes improperly attributed to ISO 5218.

3. These terms are derived from the terminology and codes for sex in ASTM E1633-02a "Standard Specification for Coded Values Used in the Electronic Health Record."

Add CID’s to PS 3.16

### CIDxxx1 Person Gender Identity

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Type: Extensible**

**Version: 202xmmdd**

**UID: 1.2.840.TBD**

Table CID CIDxxx1. Person Gender Identity

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coding Scheme Designator | Code Value | Code Meaning |  | UMLS Concept ID |
| SCT | 446141000124107 | Identifies as female gender |  | C3887375 |
| SCT | 446151000124109 | Identifies as male gender |  | C3887374 |
| SCT | 33791000087105 | Identifies as nonbinary gender |  | C3887376 |
|  |  |  |  |  |

### CIDxxx2 Sex Parameters for Clinical Use

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Type: Non-Extensible**

**Version: 202xmmdd**

**UID: 1.2.840.TBD**

Table CID CIDxxx2. Sex Parameters for Clinical Use

| Coding Scheme Designator | Code Value | Code Meaning |
| --- | --- | --- |
| DCM | Sup233-01 | Female typical parameters |
| DCM | Sup233-02 | Male typical parameters |
| DCM | Sup233-03 | Neither male typical nor female typical parameters |

Note: <https://build.fhir.org/ig/HL7/fhir-gender-harmony/branches/main/ValueSet-sex-for-clinical-use-category-vs.html> for current IG draft

### CIDxxx4 Third Person Pronouns

**Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML**

**Type: Extensible**

**Version: 202xmmdd**

**UID: 1.2.840.TBD**

Table CID CIDxxx4. Third Person Pronouns

|  |  |  |
| --- | --- | --- |
| Coding Scheme Designator | Code Value | Code Meaning |
| LOINC | LA29518-0 | He/him/his/his/himself |
| LOINC | LA29519-8 | She/her/her/hers/herself |
| LOINC | LA29520-6 | They/them/their/theirs/themselves |

Note: These LOINC codes are not intended for use in languages other than English.

Add SPCU codes to DICOM terminology

## D DICOM Controlled Terminology Definitions (Normative)

Table D-1. DICOM Controlled Terminology Definitions (Coding Scheme Designator "DCM" Coding

Scheme Version "01")

|  |  |  |  |
| --- | --- | --- | --- |
| Code Value | Code Meaning | Definition | Notes |
| Sup233-01 | Apply female-typical setting or reference range | Available data indicates that diagnostics, analytics, and treatments should consider best practices associated with female reference populations. | https://terminology.hl7.org/ValueSet-sex-parameter-for-clinical-use.html |
| Sup233-02 | Apply male-typical setting or reference range | Available data indicates that diagnostics, analytics, and treatments should consider best practices associated with male reference populations. | https://terminology.hl7.org/ValueSet-sex-parameter-for-clinical-use.html |
| Sup233-03 | Apply specified setting or reference range | Available data indicates that diagnostics, analytics, and treatment best practices may be undefined or not aligned with sex-derived reference populations. Additional information may be available in the form of comments and/or observations. | https://terminology.hl7.org/ValueSet-sex-parameter-for-clinical-use.html |

Add annex with use case and examples to Part 17

# Part 17

# Annex XX Sex and Gender Examples

## XX.1 Sex and Gender Attributes in the Patient Study Module

A patient’s sex and gender attributes may change during the patient’s lifespan. This is reflected in four optional attributes that are in the Patient Study Module. These are:

* The Gender Identity Sequence, which contains the patient’s chosen gender identity. This attribute may record multiple identities. This may be in order to capture a history of past identities, or it may reflect social choices. During transition a patient might chose to publicly be one identity but privately another.
* The Sex Parameters for Clinical Use Sequence, which contains codes to describe sex related parameter choices. Most often patients will have the “female-typical” or “male-typical” characteristic. This means that the typical normal reference ranges, alert limits, drug and hormone reactions, body fat characteristics, lean body mass algorithms, etc. apply. But there may be codes or comments to indicate that specific typical parameters should not be used. For example, a cardiology exam may be ordered with the SPCU reference or comment “use the patient’s gender identity, per hospital policy XYZ, for eGFR”. This could also reflect tumors affecting hormone levels that will change appropriate normal ranges or algorithm selection.
* The Name to Use Sequence holds the names that the patient wants used. This may reflect social status, rank, name changes, formal vs informal names, etc. It is present so that staff can begin a conversation without unnecessarily annoying the patient. “Herr Doktor Professor Schmidt” may be very sensitive about getting the full list of titles right, or “Captain Smith” may become angry at being addressed as “Joan”. Recent name changes might not yet be legally complete, but using the old name can cause serious distress.
* The Third Person Pronoun Code Sequence provides proper usage guidance for instructions given in writing or to care givers. In direct conversation the third person is rarely used.

All of these attributes are optional, all are multivalued, and all may be extended with local codes and guidance. The DICOM only specifies the minimum value sets for Gender, SPCU, and Third Person Pronouns. Local extensions for local usage should be expected.

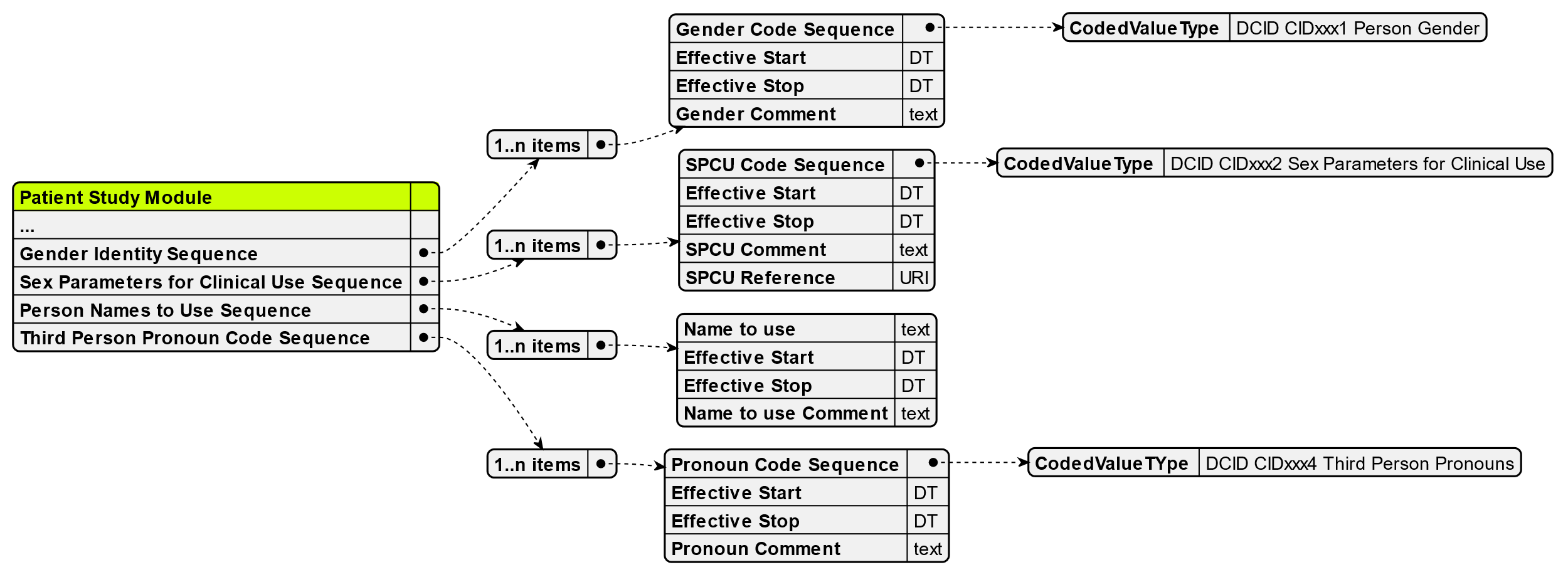


Figure XX.1-1 Attributes added to Patient Study Module

Note: “CodedValueType” indicates a code sequence as defined in Table C.6-2a, with the code chosen from the context group specified.

## XX.2 Patient Level attributes that change over time

In the DICOM Information Model, attributes in the Patient Module and the Clinical Trial Subject Module, exist at the Patient Level. This has implications when:

* One of these attributes changes in the real world, e.g., a patient’s name changes.
* SOP Instances are imported from a different environment.
* Hospital merger and consolidated VNA.

Most organizations will have policies regarding what should be done when one of these changes takes place. DICOM does not specify or recommend a policy. It tries to adapt and support whatever policies are in use locally.

DICOM expects the Patient’s Name (0010,0010) to comply with the rules set locally. Similarly, the Patient’s Sex (0010,0040) will reflect the local administrative policies for determining sex. If changes to these attributes result in changes to the attribute values (according to local policies), the Original Attributes Sequence (0400,0561) and Instance Coercion DateTime (0008,0015) can be used to capture the changes made.

There are also attributes at the Study Level that can change between studies when Patient Root queries are performed. These include:

* Gender Identity Sequence (0010,xxxx)
* Sex Parameters for Clinical Use Sequence (0010,xxx2)
* Person Names to Use Sequence (0010,xxx3)
* Third person pronoun sequence (0010,xx22)

These attributes need to be the same for all the SOP Instances in a single study, and are allowed to be different in different studies for the same patient.

All references to patient information within the SR tree contents are for a specific time. The information in the content tree takes precedence over the information in the other modules. The information from the other modules is used as the default when this patient information is not present in the SR tree contents. This extends to acquisition contexts, so that within the SR tree there can be results from both an analysis algorithm using SPCU of “male-typical” and SPCU of “female-typical”.

## XX.3 Example of HL7/DICOM interactions

This use case illustrates the interactions between HL7 and DICOM using systems during the performance of a PET/CT examination. It shows how Modality Worklist (MWL), Modality Performed Procedure Step (MPPS), PET imaging, and staff activities are affected by sex and gender parameters. This is consistent with the HL7 Gender Harmony model.

### XX.3.1 Introduction

This use case illustrates DICOM Sex and Gender encoding, including: admission, patient prep, examination, post processing and reporting for a PET/CT examination order.

In this case, there are three instances of Sex Parameters for Clinical Use (SPCU).

* The ordering physician provides instructions for interpreting lab values as an SPCU comment.
* A post-processing analysis application utilizes the SPCU valid at time of birth for its reference values.
* The radiologist determines the appropriate SPCU for a Standard Uptake Value (SUV) calculation based on the patient's body composition.

The EHR provides Sex Parameters for Clinical Use (SPCU) of “female” and a EHR Gender Identity of “male” during check-in for a PET/CT examination. Then

1. The patient’s name to use from the EHR is incorrect, which is noted for correction by admitting staff,
2. The radiologist updates the SPCU to match patient’s body composition,
3. The PET/CT examination is performed,
4. An analysis postprocessing application provides an analysis
5. the patient’s demographics are updated, and
6. the PET/CT report is delivered.

### XX.3.4 Precondition(s):

1. John Smith is registered in the hospital record system with his old name of “Janet Smith”

2. Patient ID has not changed

3. John Smith arrives at an outpatient facility with an appointment

4. Patient history, social history, medical history has already been captured upstream and are available in the facility's EHR

5. Physician order for examination is utilizing information from the facility

6. Facility system has not been updated for the name change

7. Relevant prior exams for comparison are retrieved based on rules established by the radiology department, using the name Janet Smith (e.g., body region, patient ID, type of exam).

8. Technical scan and contrast administration parameters (protocol) are pre-determined based on departmental protocols for a female patient

### XX.3.5 Postcondition(s):

1. PET/CT Examination is complete or cancelled

2. Report is generated and available

3. Discussion to initiate name change correction in the EHR has occurred

4. The PACS coerces the DICOM Name to Use in the DICOM objects based on policy. For example:

1. EHR name (Janet Smith) is associated with a Name to Use element whose validity period ends on day of exam

2. Add a Name to Use (John Smith) whose validity period begins on day of exam

### XX.3.6 Workflow/Storyboard:

Note: IHE transactions are noted in brackets

The examples (e.g., “Example 01”) are in the later text as links to HL7 web page, or local text below. What to do about diagram/text/hotlink?

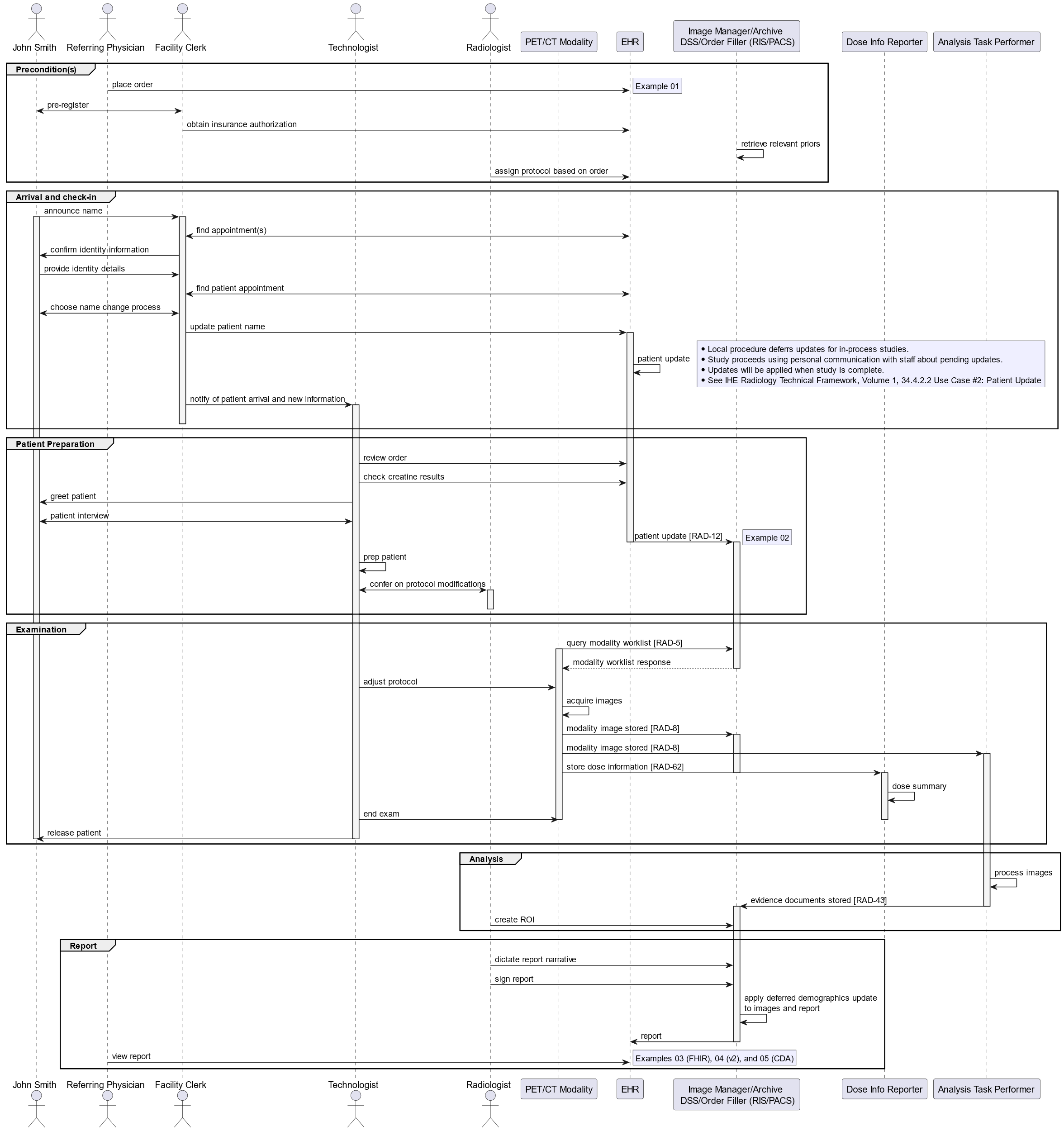


Figure 1 Workflow Storyboard

#### XX.3.6.1 Arrival and check-in:

In this scenario, the patient initiates a discussion with the clerk.

1. When John arrives at the waiting room for a PET/CT examination he announces himself as “John”.

2. The clerk asks “John Williams?”, seeing a John Williams in the schedule.

3. Response, “No, Smith”

4. The clerk asks, “Date of birth?”

5. Smith: “January first, 1945”

6. The clerk performs a date-of-birth based lookup and finds:

7. There is a schedule entry for Janet Smith, with Patient’s Sex “F” and Patient’s Gender “M”, and with a Patient Names to Use “John Smith”. The SPCU Comment contains “Hormonal treatment, use affirmed gender creatinine reference ranges”. The SPCU reference points to the relevant hospital medical policy.

8. The clerk confirms that the birth dates match, confirms the patient’s identity in accordance with local policies, and checks in the patient.

9. The HL7 v2 message is converted to DICOM Modality Worklist (MWL) Attributes (partial SOP Instance contents) for the MWL query. After check-in, the order is visible in the MWL

10. Based on clinic policies, the clerk asks whether John wants to go through the name change process at the clinic to reflect his preferred name. Name change is initiated.

11. The clerk notifies the technologist that the patient has arrived.

#### XX.3.6.2 Patient Preparation

1. The technologist checks their schedule for John, and finds the order for “Janet Smith”, Patient’s Sex “F” and Patient’s Gender “M”, and with a Patient Names to Use “John Smith”. Sex Comment contains “Hormonal treatment, use affirmed gender creatinine reference ranges”.

2. The technologist greets the patient as “John” and reconfirms birthdate.

3. The technologist directs the patient to a changing area and instructs the patient to remove jewelry and to change into a gown.

4. When the patient is ready, the technologist asks the necessary related preparation questions, e.g., pregnancy status, most recent menstruation, allergies, history, preferred arm for IV contrast administration, etc.

5. The technologist explains the procedure to the patient and answers any questions the patient may have.

6. Since the protocol calls for a contrast-enhanced CT, the technologist reviews the most recent eGFR, BUN and creatinine.

7. The technologist confers with the radiologist to discuss lab values for safe contrast administration, given the Sex Comment, as well as the patient’s eGFR, BUN and creatinine.

8. The radiologist notes that the provided SPCU of Female-typical, is not consistent with the SPCU Comment and calls the ordering physician to confirm.

9. After discussing patient history with the ordering physician, the radiologist provides protocol alterations based on the patient’s transgender status.

Note: The pre-identified protocol was based on a female-typical patient (see item 8 in preconditions).

#### XX.3.6.3 Examination

1. The technologist knows to select the MWL entry for “Janet Smith” and anticipates the Patient’s Sex of “F”. This does not trigger a wrong patient concern.

2. Patient demographics are loaded into the scanner demographics interface.

3. The technologist applies alterations prescribed by the radiologist to the scanner and contrast protocol. The radiotracer dose is not changed, as the department standardizes doses regardless of Patient’s Sex.

4. The technologist starts an IV, administers radiotracer, and connects the contrast injector for the contrast-enhanced CT portion of the procedure.

5. The study is performed.

6. The images and Radiation Dose Structured Report (RDSR) are transferred to the PACS, Dose Information Reporter and Analysis Task Performer systems.

#### XX.3.6.4 Analysis

1. The radiologist creates an SUV ROI on the PACS. The PACS identifies multiple items with different values in the Sex Parameters for Clinical Use Sequence (0010,xxx2), and prompts the radiologist to enter a value “M” or “F”.

2. The Dose Information Reporter collects the RDSR, without exception.

3. The Analysis Task Performer parses the Sex Parameters for Clinical Use Sequence (0010,xxx2) and identifies an Item with a Start DateTime (0010,xxx6) that matches the Patient's Birth Date (0010,0030), having a SPCU Code Sequence (0010,xxx9) of (Female-typical). The algorithm processes the images based on female reference values and transfers evidence documents to the PACS.

Note: Sex at birth is required to determine reference values for AI and non-AI analysis algorithms in various domains, such as cardiology and neurology.

#### XX.3.6.5 Reporting

1. The radiologist dictates findings pertaining to the procedure, noting scanner and contrast protocol modifications in the “Request” section of the report.

2. The report format has been configured to include Patient’s Sex (0010,0040), Patient’s Gender Code (0010,xxx4).(0008,0104), Patient Name (0010,xxx3

3. The initial report reads:

> Patient’s Name = “Janet Smith”

> Patient’s Sex = “F”

> Patient’s Gender = “M”

> Name to Use = “John Smith"

4. After the patient’s name change has been processed, the report is amended. The addended report reads:

> Patient’s Name = “John Smith”

> Patient’s Sex = “F”

> Patient’s Gender = “M”

> Name to Use = “John Smith"

### XX.3.7 Examples

The HL7 Implementation Guides have examples of FHIR, V2, and CDA documents with their gender model encodings. These can be found at

<https://github.com/snichols001/fhir-gender-harmony/blob/main/input/pagecontent/v2dicom_use_case.md>

These might be mapped onto the DICOM Patient and Patient Study Module attributes as shown below. These mappings are just illustrative.

#### XX.3.7.1 Example 01: Imaging Order

The following HL7 message is an order for “PET Myocardial Perfusion, Rest and Stress” imaging procedure.

The administrative sex is female based on prior admissions. The patient was given a gender of female at birth in 1978. At admission on July 15 2022, the patient informed the admitting staff that they now identify as male and are taking hormonal treatment.

The PET imaging procedure uses creatinine reference ranges to determine details of the procedure. Creatinine reference ranges are sex related. Hormonal treatment for gender changes also affects creatinine reference ranges. At this hospital the medical procedure is that for patients taking hormonal treatment, use affirmed gender creatinine reference ranges.

The current SPCU is set as male-typical, with the comment that due to hormonal treatment male-typical creatinine reference ranges should be used. The assumed SPCU at birth is provided for equipment that needs to know the original SPCU as well as the current SPCU. (The SPCU at birth is not needed by the PET/CT system, but might be needed by subsequent analysis systems.)

The HL7 message is:

MSH|^~\&|||||20220715142240||OMI^O23|WSA5mY0UBuCGrytRTAFR8UWJ|P|2.9.1

PID|||patientID^^^^MR||Smith^Janet^^^^^B~Smith^John^^^^^N||19780328000000|F

GSP|1|S||76691-5^Gender identity^LN|446151000124109^Identifies as male gender^SCT|20220715010000

GSC|1|S||Male-typical^Male typical parameters^SexParameterForClinicalUse||OBR^4|20220715

090000|Due to hormonal treatment, use male-typical Creatinine reference ranges

GSC|2|S||Female-typical^Female typical parameters^SexParameterForClinicalUse|19780328000000^20220715090000|OBR^4||Sex at Birth

ORC|NW

OBR||||241439007^PET heart study^SCT|||||||||||||||||||||||||||||||||||||||||82800-4^PET+CT Heart W contrast IV^LN

IPC|accessionNum|procedureID|studyInstanceUID|schProcedureStepId|PT^Positron emission tomography^DCM|122793^PET Myocardial Perfusion, Rest and Stress^DCM

These map to DICOM Modality Worklist and be copied into generated SOP instances. The worklist policy and the modality policy is to accurately copy and forward as much of this information as they can.

The modality may also need to use some of this information for the procedure. In this particular scenario ….

If the modality does not handle SPCU and related information automatically, it might display this information for the operator to over-ride the default behavior.

as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HL7 V2.9.? OMI field | DICOM MWL Attribute Name | Tag | VR | DICOM Value |
| PID-5 | Patient’s Name | (0010,0010) | PN | Smith^Janet^^^ |
| PID-7 | Patient's Birth Date | (0010,0030) | DA | 19780328 |
| PID-8 | Patient’s Sex | (0010,0040) | CS | F |
| “GSP-4” | Gender Identity Sequence | (0010,xxxx) | SQ |  |
| n/a | *Begin item* |  |  |  |
| n/a | >Gender Code Sequence | (0010,xxx4) | SQ |  |
| n/a | *Begin item* |  |  |  |
| GSP-5-1 | >>Code Value | (0008,0100) | SH | 446151000124109 |
| GSP-5-3 | >>Coding Scheme Designator | (0008,0100) | SH | SCT |
| GSP-5-2 | >>Code Meaning | (0008,0104) | LO | Identifies as male gender |
| n/a | *End item* |  |  |  |
| GSP-6 | Applicability |  |  | 20220715010000 |
| n/a | *End item* |  |  |  |
| “GSC” | Sex Parameters for Clinical Use Sequence | (0010,xxx2) | SQ |  |
| n/a | *Begin item* |  |  |  |
| n/a | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| n/a | *Begin item* |  |  |  |
| “GSC-4-1” | >>Code Value | (0008,0100) | SH | Sup233-02 (HL7 “Male-typical”) |
| “GSC-4-3” | >>Coding Scheme Designator | (0008,0102) | SH | DCM |
| “GSC-4-2” | >>Code Meaning | (0008,0104) | LO | Male-typical |
| n/a | *End item* |  |  |  |
| GSC-8 | >SPCU Comment | (0010,xxx1) | LT | Hormonal treatment, use gender identity Creatinine reference ranges |
| GSC-5-1 | **>Applicability** | **(0010,xx27)** | DT | 20220715 |
| n/a | *End item* |  |  |  |
| n/a | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| n/a | *Begin item* |  |  |  |
| GSC-4-1 | >>Code Value | (0008,0100) | SH | Sup233-01 |
| GSC-4-3 | >>Coding Scheme Designator | (0008,0102) | SH | DCM |
| GSC-4-2 | >>Code Meaning | (0008,0104) | LO | Female-typical |
| n/a | *End item* |  |  |  |
| GSC-8 | >SPCU Comment | (0010,xxx1) | LT | Sex at birth |
| GSC-5-1 | **>Applicability** | **(0010,xx27)** | DT | 197803280000\20220715090000 |
| n/a | *End item* |  |  |  |
| n/a | Person Names to Use Sequence | (0010,xxx3) | SQ |  |
| n/a | *Begin item* |  |  |  |
| PID-5 | >Name to use | (0010,xx12) | LT | Smith, John |
| GSC-5-1 | **>Applicability** | **(0010,xx27)** | DT | 20220715090000 |
| n/a | *End item* |  |  |  |

#### XX.3.7.2 Example 02: FHIR Mapping

DISCUSS: Does this example help, or should this be just the reference to FHIR document example.

The patient is referenced as the subject of [DiagnosticReport](#reporting), DocumentReference, ImagingStudy or ImagingSelection. Mapping to DICOM is as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FHIR Attribute | DICOM Attribute Name | TAG | VR | Value |
| Patient.name [use=official] | Patient's Name | (0010,0010) | PN | Smith\^John^^^ |
| Patient.gender | Patient's Sex | (0010,0040) | CS | F |
| Patient.extension [PGenderIdentity] | Gender Identity Sequence | (0010,xxxx) | SQ |  |
| -- element start -- |  |  |  |  |
|  | >Gender Code Sequence | (0010,xxx4) | SQ |  |
| -- element start -- |  |  |  |  |
| Patient.extension [value code] | >>Code Value | (0008,0100) | SH | 446151000124109 |
| Patient.extension [value system] | >>Coding Scheme Designator | (0008,0102) | SH | SCT |
| Patient.extension [value display] | >>Code Meaning | (0008,0104) | LO | Identifies as male gender |
| -- element end -- |  |  |  |  |
| Patient.extension [period start] | >Start DateTime | (0010,xxx6) | DT | 20220715010000 |
| -- element end -- |  |  |  |  |
| serviceRequest.extension [PatSexParameterForClinicalUse] | Sex Parameters for Clinical Use Sequence | (0010,xxx2) | SQ |  |
| -- element start -- |  |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| -- element start -- |  |  |  |  |
| serviceRequest.extension [value code] | >> Code Value | (0008,0100) | SH | Male-typical |
| serviceRequest.extension [value system] | >>Coding Scheme Designator | (0008,0102) | SH | DCM **FIX from FHIR Spec** |
| serviceRequest.extension [value display] | >>Code Meaning | (0008,0104) | LO | Male typical parameters |
| -- element end -- |  |  |  |  |
| serviceRequest.extension [comment] | >SPCU Comment | (0010,xxx1) | LT | Hormonal treatment, use affirmed gender Cr reference ranges |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
| -- element start -- |  |  |  |  |
| serviceRequest.extension [period start] | **>>Applicability** | **(0010,xx27)** | DT | 20220715090000 |
| -- element end -- |  |  |  |  |
| serviceRequest.extension [supportingInfo reference] | >SPCU Reference | (0010,xx10) | UR | https://doi.org/10.1210/jendso/bvab048.1607 |
| -- element end -- |  |  |  |  |
| -- element start -- |  |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| -- element start -- |  |  |  |  |
| serviceRequest.extension [value code] | >> Code Value | (0008,0100) | SH | Female-typical |
| serviceRequest.extension [value system] | >>Coding Scheme Designator | (0008,0102) | SH | DCM **FIX From FHIR Spec** |
| serviceRequest.extension [value display] | >>Code Meaning | (0008,0104) | LO | Female typical parameters |
| -- element end -- |  |  |  |  |
| serviceRequest.extension [comment] | >SPCU Comment | (0010,xxx1) | LT | Sex at birth |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
| -- element start -- |  |  |  |  |
| serviceRequest.extension [period start] | **>Applicability** | **(0010,xx27)** | DT | 19780410000000 (First element) |
| serviceRequest.extension [period end] | **>Applicability** | **(0010,xx27)** | DT | 20220715090000 (Second element) |
| -- element end -- |  |  |  |  |
| -- element end -- |  |  |  |  |
| -- element start -- | Person Names to Use Sequence | (0010,xxx3) | SQ |  |
| -- element start -- |  |  |  |  |
| Patient.name[use=usual] | >Name to use | (0010,xx12) | LT | John Smith |
| -- element end -- |  |  |  |  |

## XX.4 Examples of Name to Use

Person names are culturally and administratively complex. DICOM often uses names to identify the subject of a SOP Instance, and DICOM often uses names as part of queries to find SOP Instances. DICOM does make some assumptions about likely aspects of naming, but expects that external policies and procedures are used to determine the proper name to use for a patient. The name to be used in conversation might not be the same as the Patient’s Name (0010,0010) used in the SOP Instances.

DICOM applications expect to be provided the name or names to be used as part of a modality worklist, report, or other SOP instance. There may be several kinds of names.

The DICOM name attributes related to a patient are:

Patient’s Name (0010,0010) – a single name at patient level that is required to be supported in many C-FIND services. This is usually coordinated with the other hospital systems to be a primary name for finding records for the patient. This name must be the same for all SOP Instances for that patient when in a Patient Root query model. When using a Study Root query model these are allowed to change from study to study, but they must be the same for all instances in a single study.

A Patient’s Name (0010,0010) may change, but this must be done systematically and consistently to preserve the Patient Root and Study Root query requirements.

Other Patient Names (0010,1001) – optional other names at patient level for the patient. These names must be the same for all SOP Instances for that patient when in a Patient Root query model. When using a Study Root query model these are allowed to change from study to study, but they must be the same for all SOP Instances in a single study.

Other Patient Names (0010,1001) may change, but this must be done systematically and consistently to preserve the Patient Root and Study Root query requirements.

Person Names to Use Sequence (0010,xxx3) – optional other names at study level for the patient. These names are allowed to change from study to study in both Patient Root and Study Root query models, but they must be the same for all SOP Instances in a single study.

A history of past names may be held in this attribute by making use of the applicability dates. When the patient may be known by multiple names, that information can be held in this attribute.

A patient’s name might change for a variety of reasons:

1. The patient’s name was not known prior to performing the study, so a temporary pseudonym is assigned. Later, when the patient is identified, the pseudonym is replaced by the patient’s correct name.
2. The patient gets married, divorced, adopted, or some other social event takes place that results in a name change.
   * This might result in a change to their official registered name, or
   * This might not change their official registered name.
3. The patient has had gender reassignment and associated name change.

In some unusual circumstances there are differences between official registered names in different jurisdictions for the same person at the same time.

When using a Patient Root model for storage and query of SOP Instances, there will need to be a local policy for how to handle changes to the Patient’s Name (0010,0010) or Other Patient Names (0010,1001). This may require modification of many SOP Instances to preserve the restriction that these have the same value for all SOP Instances for that patient, as well as maintaining consistency with Modified Attributes Sequence (0400,0550).

There are also a wide variety of kinds of names. For example, the Swiss have identified seven (7) kinds of names that they officially recognize. See <http://fhir.ch/ig/ch-core/ValueSet-ech-11-namedatatype.html>. In addition, there are unofficial informal name uses that can be critically important in social interactions with patients.

One example is the use of a “customary” name in cultures where the registered name is inconvenient and used only in special legal circumstances. For example, there is a Dutch photographer, cinematographer, and director whose official registered name is “Anton Johannes Gerrit Corbijn van Willenswaard" and he uses "Anton Corbijn" for almost all purposes. There will be a local policy for which of his names is used as Patient’s Name (0010,0010), and this may be different from place to place. The Person Name to Use Sequence (0010,xxx3) for him will contain “Anton Corbijn”.

The Person Name to Use Sequence (0010,xxx3) can also reflect name changes that are in process, and name uses that are informal personal preferences.

The Person Name to Use Sequence includes optional applicability dates and comments. These can be used to capture information about change history, which can be important when understanding the patient record for a patient that has a long history and whose name has changed during that history.

The mapping between DICOM uses and other communications protocols is not specified by DICOM. For example, the HL7 v2.9 encoding of Anton Corbijn’s name might be any of the following five encodings:

1. PID|||patientID^^^^MR||Corbijn van Willenswaard^Anton Johannes Gerrit^^^^^L~^^^^^^N^^^^^^^^^^Anton Corbijn||19780328000000|M|

2. PID|||patientID^^^^MR||Corbijn van Willenswaard^Anton Johannes Gerrit^^^^^L^^^^^^^^^^Anton Corbijn||19780328000000|M|

3. PID|||patientID^^^^MR||Corbijn van Willenswaard^Anton Johannes Gerrit^^^^^L~Corbijn^Anton^^^^^N||19780328000000|M|

4. PID|||patientID^^^^MR||Corbijn^Anton^^^^^N||19780328000000|M|

5. PID|||patientID^^^^MR||Corbijn^Anton^^^^^L||19780328000000|M| (this is wrong, but it is a likely mistake)

The corresponding Name to Use (0010,xx12) would contain:

“Anton Corbijn”

The following bibliography reflects academic publications that informed the HL7 and DICOM design efforts. It is provided for reviewers of this supplement as background information. The DICOM requirements were not specifically derived from these documents.

Question for reviewers: Should this information be placed into DICOM PS3.17? The academic literature on this topic and the regulatory actions will continue, making any bibliography placed into PS3.17 increasingly obsolete.

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