Digital Imaging and Communications in Medicine (DICOM)

Supplement 233

Patient Model Gender Enhancements

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# Document History

|  |  |  |  |
| --- | --- | --- | --- |
| 2019/02/21 | Version 3 | DAC | Updated to reflect conventions in DocBook publishing |
| 2022/12/19 | Version 4 |  | Updated open and closed issues |
| 2023/01/16 | Version 5 |  | Update prior to WG-06 meeting |
| 2023/02/14 | Version 8 |  | Tcon version |
| 2023/02/28 | Version 9 |  | Tcon version |

# 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?  **Look into 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. |
| 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. |
| 16 | All Supplements that are in progress need to be updated somehow. **This is not a comment issue. It’s a TODO.** |
| 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 is to extend with the FHIR codes for SPCU. |
| 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 not provide justification: NO,**  **Will conformance describe capability: MAYBE/YES** |
| 31 | Check the language on sex/gender based analytic results etc. E.g., BSA. Confirm that there is a way to indicate sex used, etc. on observations. **TODO** |
| 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.  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? **TODO** |
| 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.   Proposal: This is outside the scope of DICOM. It belongs to IHE or some other organization. |
| 36 | In the cross-community scenario:   * How to manage the case if one jurisdiction does not recognize the sex/gender attributes of another? * What impact will the patient name change have on the Master Patient Index weighting of search results? * Is this likely to require a manual merge of records? (see IHE ITI-30)   Proposal: This is outside the scope of DICOM. It belongs to IHE or some other organization. |
| 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 cover this. |
| 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. |
| 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 demographics changes?  Proposal: No. The 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”. PN does not specify which elements should be included. But, HL7 v2 uses XPN for both old and new attributes. HL7 FHIR mapping is somewhat easier to PN than ST, but this is less of an issue.  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, move to closed TODO*** |
| 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 Sex and Gender. 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:   * Patient Identity confirmation * Billing activities * Patient reconciliation * Legal actions   If a need emerges for RSG attributes they can be added later by a CP. |
| 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 pronouns. Some languages, e.g., Mandarin and Cantonese, do not traditionally use pronouns, so it is a non-issue for them. Other languages have complex conjugation, declination, and similar 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 are 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 value set 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. |
| 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) |
| 35 | What imaging activities are affected by the 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. |
| 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 recommendation for sex at birth is to employ valid period of SPCU, and that is the proposal for DICOM. |
| 43 | In this 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 (**<url>**) 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 is being updated and turned into 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. These changes permit easy conversion between DICOM and the various HL7 standards. It:

* 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 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 codes 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 where there are 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** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time. If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time. If missing, it is valid for all times after the Stop DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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 IE model at <ref>, 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 sex assignment policies of the local administration. It is related to the Sex parameters for Clinical Use Sequence (0010,xxx2) and might be used as a substitute when the Sex parameters for Clinical Use Sequence (0010,xxx2) is not available. It is often populated based on an HL7v2 message PID-8, and thus complies with 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 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

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

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| … |  |  |  |
| **Gender Identity Sequence** | **(0010,xxxx)** | **3** | **Gender Identities that apply to this patient.**  **See the HL7 Gender Harmony logical model (http://www.hl7.org/implement/standards/product\_brief.cfm?product\_id=564).**  **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** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Time after which this Sequence Item applies.** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Time after which this Sequence Item no longer applies.** |
| **>Gender Identity Comment** | **(0010,xxx8)** | **3** | **Description of gender identity and when it should be used.** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **3** | **Sex related parameters that affect clinical treatment of this patient, including procedures and diagnostic analysis.**  **See section C.7.2.2.1.x2**  **One or more items are permitted in this Sequence.** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **3** | **A coded description of sex parameters 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** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Time after which this Sequence Item applies.** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Time after which this Sequence Item no longer applies.** |
| **>SPCU Comment** | **(0010,xxx1)** | **1C** | **Further description of clinical implications and reasons for the selected code.**  **Required if SPCU Code is missing, may be present otherwise.** |
| **>SPCU Reference** | **(0010,xx10)** | **1C** | **URI reference that explains, extends, or justifies the SPCU observation.**  **Required if SPCU Code is missing, may be present otherwise.** |
| **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.** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time. If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time. If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>Name to Use Comment** | **(0010,xx13)** | **3** | **Further explanation of appropriate 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.** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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.x1 Patient's Gender and Sex Attributes

The Gender and Sex Attributes are concrete instantiations of the HL7 Gender Harmony logical model (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=564>. These are expected to support social interactions between patient, staff, care givers, family, and others.

**TODO, switch to stable references here and section 2 when the ballot is approved by HL7.**

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

Sex Parameter for Clinical Use (SPCU) - a summary sex related parameters that guide how settings or reference ranges apply to this patient. This may be reference ranges, appropriate setup, diagnostic algorithm parameters, etc.

Sex Parameters for Clinical Use Sequence (0010,xxx2) provides codes for observations that are related to a clinically relevant biological distinction between male and female. They can be used for purposes such as algorithm selection, normal limits, etc. Multiple codes are possible. It is possible that for some purposes the patient should be treated as part of a male reference population, in others as part of a female reference population, and in others with patient specific or unknown characteristics.

Note: Depending on local policies, Patient’s Sex (0010,0040) may be used as the alternative to Sex Parameters for Clinical Use Sequence (0010,xxx2).

Each individual sequence item may have an SPCU code (0010,xxx9).

Each individual sequence item may have a Validity Period Sequence (0010,xxx5) specifying the time interval during which this code applies. For example, a patient may have two SPCU items, one to indicate the value that was valid at time of birth, and another to indicate the value that is currently valid.

Each individual sequence item may have an SPCU Comment (0010,xxx1) to further explain the use of the SPCU code (0010,xxx9).

Each individual sequence item may have one or more SPCU References (0010,xx10) to other observations or reports that further explain the use of the SPCU Code (0010,xxx9). For example, there may be a reference to a treatment policy document that applies to this patient.

###### 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 that applies to this person. In some cultures or situations there may be more than one Gender Identity Sequence item for a person.

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 personal sense of being a man, woman, boy, girl or any point on the gender spectrum, gender identity might be recorded as unknown or might be missing.

3. 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.

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

The Name to Use (0010,xx12) is a name to be used when talking with the patient or others about the patient. This name need not be an official name of any sort, nor does it need to comply with any standard naming structure. The name need not match the person’s name for official records purposes. It is the name chosen for social interactions.

Note: This is encoded as a text string rather than a person name (PN) value 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.

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 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** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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 also 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** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time.**  **If missing, it is valid for all times after the Stop DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>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.** |
| **>Start DateTime** | **(0010,xxx6)** | **3** | **Valid after this time.**  **If missing, it is valid for all times before the Stop DateTime (0010,xxx7)** |
| **>Stop DateTime** | **(0010,xxx7)** | **3** | **Valid before this time.**  **If missing, it is valid for all times after the Start DateTime (0010,xxx6)** |
| **>Pronoun Comment** | **(0010,xx23)** | **3** | **Further explanation of pronoun usage** |
| … |  |  |  |

# Part 4

### C.6.1 Patient Root SOP Class Group

…

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 |

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 |
| Patient's Sex | (0010,0040) | O |
| **Gender Identity Sequence** | **(0010,xxxx)** | **O** |
| **>Gender Code Sequence** | **(0010,xxx4)** | **O** |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** |
| **>Stop DateTime** | **(0010,xxx7)** | **O** |
| **>Gender Comment** | **(0010,xxx8)** | **O** |
| **Sex Parameters for Clinical Use Sequence** | **(0010,xxx2)** | **O** |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **O** |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** |
| **>Stop DateTime** | **(0010,xxx7)** | **O** |
| **>SPCU Comment** | **(0010,xxx1)** | **O** |
| **>SPCU Reference** | **(0010,xx10)** | **O** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** |
| **>Name to use** | **(0010,xx12)** | **O** |
| **>Start DateTime** | **(0010,xxx6)** | **O** |
| **>Stop DateTime** | **(0010,xxx7)** | **O** |
| **>Name to Use Comment** | **(0010,xx13)** | **O** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **O** |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** |
| **>Stop DateTime** | **(0010,xxx7)** | **O** |
| **>Pronoun Comment** | **(0010,xx23)** | **O** |
| Other Patient IDs Sequence | (0010,1002) | O |

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)** | **3/3** | **Not Allowed** |  |
| ***>>Include Table F.7.2-1a. Modality Performed Procedure Step Enhanced Code Value Macro with no N-SET*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>Gender Comment** | **(0010,xxx8)** | **3/3** | **Not Allowed** |  |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **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*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>SPCU Comment** | **(0010,xxx1)** | **3/3** | **Not Allowed** |  |
| **>SPCU Reference** | **(0010,xx10)** | **3/3** | **Not Allowed** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** | **Not Allowed** |  |
| **>Name to use** | **(0010,xx12)** | **3/3** | **Not Allowed** |  |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>Name to Use Comment** | **(0010,xx13)** | **3/3** | **Not Allowed** |  |
| **Pronoun Code Sequence** | **(0010,xx22)** | **3/3** | **Not Allowed** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **3/3** | **Not Allowed** |  |
| ***>>*** ***Include Table F.7.2-1a. Modality Performed Procedure Step Enhanced Code Value Macro with no N-SET*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** |  |
| **>Pronoun Comment** | **(0010,xx23)** | **3/3** | **Not Allowed** |  |
| Referenced Patient Sequence | (0008,1120) | 2/2 | 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)** | **3/3** |
| ***>>Include Table 8-2a. “Enhanced Coded Entry Macro with Optional Matching Key Support and Optional Meaning”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** |
| **>Gender Comment** | **(0010,xxx8)** | **3/3** |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **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”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** |
| **>SPCU Comment** | **(0010,xxx1)** | **3/3** |
| **>SPCU Reference** | **(0010,xx10)** | **3/3** |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** |
| **>Name to use** | **(0010,xx12)** | **3/3** |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** |
| **>Name to Use Comment** | **(0010,xx13)** | **3/3** |
| **Pronoun Code Sequence** | **(0010,xx22)** | **3/3** |
| **>Pronoun Code sequence** | **(0010,xx22)** | **3/3** |
| ***>>Include Table 8.8-1 “Code Sequence Macro Attributes”*** | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** |
| **>Pronoun Comment** | **(0010,xx23)** | **3/3** |
| **…** |  |  |

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** | **2** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **O** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Gender Comment** | **(0010,xxx8)** | **O** | **2** |  |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **O** | **2** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **O** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>SPCU Comment** | **(0010,xxx1)** | **O** | **2** |  |
| **>SPCU Reference** | **(0010,xx10)** | **O** | **2** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** | **2** |  |
| **>Name to use** | **(0010,xx12)** | **O** | **2** |  |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Name to Use Comment** | **(0010,xx13)** | **O** | **2** |  |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** | **2** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **O** | **2** |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Pronoun Comment** | **(0010,xx23)** | **O** | **2** |  |
| **…** |  |  |  |  |

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** | **2** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **O** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Gender Comment** | **(0010,xxx8)** | **O** | **2** |  |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **O** | **2** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **O** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>SPCU Comment** | **(0010,xxx1)** | **O** | **2** |  |
| **>SPCU Reference** | **(0010,xx10)** | **O** | **2** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **O** | **2** |  |
| **>Name to use** | **(0010,xx12)** | **O** | **2** |  |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Name to Use Comment** | **(0010,xx13)** | **O** | **2** |  |
| **Pronoun Code Sequence** | **(0010,xx22)** | **O** | **2** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **O** | **2** |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **O** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **O** | **2** |  |
| **>Pronoun Comment** | **(0010,xx23)** | **O** | **2** |  |
| **…** |  |  |  |  |

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)** | **-** | **2** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **-** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **-** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **-** | **2** |  |
| **>Gender Comment** | **(0010,xxx8)** | **-** | **2** |  |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **-** | **2** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **-** | **2** |  |
| ***>>Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **-** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **-** | **2** |  |
| **>SPCU Comment** | **(0010,xxx1)** | **-** | **2** |  |
| **>SPCU Reference** | **(0010,xx10)** | **-** | **2** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **-** | **2** |  |
| **>Name to use** | **(0010,xx12)** | **-** | **2** |  |
| **>Start DateTime** | **(0010,xxx6)** | **-** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **-** | **2** |  |
| **>Name to Use Comment** | **(0010,xx13)** | **-** | **2** |  |
| **Pronoun Code Sequence** | **(0010,xx22)** | **-** | **2** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **-** | **2** |  |
| ***>>*** ***Include Table C.6-2a “Enhanced Code Value Keys Macro with Optional Keys”*** | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **-** | **2** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **-** | **2** |  |
| **>Pronoun Comment** | **(0010,xx23)** | **-** | **2** |  |
| **…** |  |  |  |  |

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** | **-** | **3** |  |
| **>Gender Code Sequence** | **(0010,xxx4)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Gender Comment** | **(0010,xxx8)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **Sex parameters for clinical use Sequence** | **(0010,xxx2)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>SPCU Code Sequence** | **(0010,xxx9)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>SPCU Comment** | **(0010,xxx1)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>SPCU Reference** | **(0010,xx10)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **Person Names to Use Sequence** | **(0010,xxx3)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Name to use** | **(0010,xx12)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Name to Use Comment** | **(0010,xx13)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **Pronoun Code Sequence** | **(0010,xx22)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Pronoun Code sequence** | **(0010,xx22)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| ***>>Include CC.2.5-2a. “UPS Code Sequence Macro”*** | | | | | | | | |
| **>Start DateTime** | **(0010,xxx6)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Stop DateTime** | **(0010,xxx7)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |
| **>Pronoun Comment** | **(0010,xx23)** | **3/3** | **Not Allowed** | **O** | **3/3** | **-** | **3** |  |

# 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) | Start Time |  | DT | 1 |
| (0010,xxx7) | 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 |

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 | Female | Identifies as female gender | To be promoted May 2022 | 446141000124107 |
| SCT | Male | Identifies as male gender | To be promoted May 2022 | 446151000124109 |
| SCT | Nonbinary | Identifies as nonbinary gender | To be promoted May 2022 | 33791000087105 |
|  |  |  |  |  |

Note: 1. HL7 uses a variety of null flavors to encode various reasons that Person Gender may be missing or not known.

2. The person gender codes will be extended with local, regional, and national extensions. For example, Canada has chosen to add codes for “two spirit” and other gender identities.

### 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 |

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 | Female typical parameters | Use parameters for a female reference population in diagnostic, analytic, and treatment calculations and device settings. | https://build.fhir.org/ig/HL7/fhir-extensions/ValueSet-sex-parameter-for-clinical-use.html |
| Sup233-02 | Male typical parameters | Use parameters for a male reference population in diagnostic, analytic, and treatment calculations and device settings. | https://build.fhir.org/ig/HL7/fhir-extensions/ValueSet-sex-parameter-for-clinical-use.html |
| Sup233-03 | Neither male typical nor female typical parameters | Neither parameters for a male nor female reference population are appropriate for diagnostic, analytic, and treatment calculations and device settings. The appropriate parameters may be specified elsewhere. | https://build.fhir.org/ig/HL7/fhir-extensions/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 Pet/CT Use Case

(same case as HL7 Gender Harmony example for DICOM, but with examples of MWL, MPPS, PET image, etc.)

### XX.1.1 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). First, the ordering physician provides instructions for interpreting lab values within a Sex Parameters for Clinical Use comment. In the second SPCU, a post-processing AI (Artificial Intelligence) application utilizes the Sex at Birth Sequence for the basis of reference values. Third, the radiologist determines the appropriate sex to use based on the patient's body composition for a Standard Uptake Value (SUV) calculation. A patient with EHR Sex Parameters for Clinical Use (SPCU) of “female” and a EHR Gender Identity of “male” checks-in for a PET/CT examination. The examination is performed, the patient’s demographics are updated, and the report is delivered. The DICOM (Digital Imaging and COmmunications in Medicine) Standard attributes in this use case are not, at time of publication of this Implementation Guide, normative, and details in DICOM are still being defined. Readers interested in participating in development of DICOM Sex and Gender encoding, please contact the [DICOM Secretariat](mailto:dicom@dicomstandard.org).

### XX.1.2 Actors:

#### XX.1.2.1 People

1. Patient (John Smith) - whose previous records are for studies performed when his EHR Gender Identity was “female”.

2. Facility Clerk - admits patient, utilizes the Radiology Information System (RIS)

3. PET/CT Technologist

4. Recovery Nurse

#### XX.1.2.2 Systems, (using IHE Actor names)

1. Hospital EHR (ADT, Order Placer)

2. RIS (Order Filler)

3. PET/CT Modality System

4. Image Manager/Archive (PACS: Picture Archive and Communications System)

5. Dose Information Reporter

6. AI (Artificial Intelligence) Task Performer

### XX.1.3 Scope Statement:

Use case covers admission, patient prep, examination, recovery, post processing and reporting for a PET/CT examination order.

### XX.1.4 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

[\*\*Example 01\*\*](#example-01-imaging-order) depicts a HL7 v2.9.1 Imaging Order for this patient with mapping to DICOM Modality Worklist attributes.

### XX.1.5 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. DICOM Name to Use is updated 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.1.6 Workflow/Storyboard:

Note: IHE transactions are noted in brackets

Diagram

Description automatically generated

Figure 1 Workflow Storyboard

#### XX.1.6.1 Arrival and check-in:

In this scenario, the patient initiates the 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: “month, day, year”

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

7. 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”. Sex Comment contains “Hormonal treatment, use affirmed gender Cr reference ranges\[1\]”.

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 v2.9.1 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.

[\*\*Example 02\*\*](#example-02-patient-name-update) depicts a HL7 v2.9.1 Demographics Update message for this patient with mapping to DICOM Modality Worklist attributes.

This will be a link to the final text of an HL7 v.2.9.1 example. It should match this use case, but must be checked when they go final text.

#### XX.1.6.2 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 Cr 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 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 creatine.

7. The technologist confers with the radiologist to discuss acceptable lab values for safe contrast administration, given the Sex Comment, as well as the patient’s GFR, bun and creatine.

8. The radiologist notes that the provided SPCU of Female, 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 patient (see item [8 in Precondition(s)](#preconditions)).

#### XX.1.6.3 Examination

1. The technologist knows to select the MWL entry for “Janet Smith” and expects a 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 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. During administration of iodinated CT contrast, the patient complained of nausea. The technologist notifies the departmental nurse, who agrees to monitor the patient for an allergic reaction after the procedure.

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

#### XX.1.6.4 Analysis

1. The radiologist creates an SUV ROI on the PACS. The application detects the presence of Patient’s Sex (0010,0040) “F”, a Gender Code (0010,xxx4).(0008,0104) “Male” and Sex at Birth Sequence (0010,xx25) of “F” and prompts the radiologist to enter a value “M” or “F”.

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

3. The AI 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,SexParameterForClinicalUse,Female-typical parameters). 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 machine algorithms in various domains, such as cardiology and neurology.

#### XX.1.6.5 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).(0010,xx12) and SPCU Comment (0010,xxx1) in the report.

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 addended. The addended report reads:

> Patient’s Name = “John Smith”

> Patient’s Sex = “F”

> Patient’s Gender = “M”

> Name to Use = “John Smith"

The final report may be represented in [FHIR](#example-03-fhir-mapping), [HL7 v2](#example-04-imaging-report), or a [CDA](#example-05-cda-release-2-imaging-report).

These will be links to the final text of the HL7 publications of FHIR, HL7v2, and CDA.

### XX.1.7 Examples

#### XX.1.7.1 Example 01: Imaging Order

See these [examples](v2dicom\_use\_case.html#order-for-imaging) of HL7 v2.9.1 and v2.5 OMI Imaging Orders from [precondition(s)](#preconditions).

These will be links to HL7 final text for v2.

TODO. Write appropriate intro text for those diagrams.

These map to DICOM Modality Worklist and may be copied into generated SOP instances as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| V2 | Attribute Name | Tag | VR | 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 |
|  | Gender Identity Sequence | (0010,xxxx) | SQ |  |
|  | *Begin item* |  |  |  |
|  | >Gender Code Sequence | (0010,xxx4) | SQ |  |
|  | *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 |
|  | *End item* |  |  |  |
|  | *End item* |  |  |  |
|  | Sex Parameters for Clinical Use Sequence | (0010,xxx2) | SQ |  |
|  | *Begin item* |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
|  | *Begin item* |  |  |  |
| GSC-4-1 | >>Code Value | (0008,0100) | SH | Male-typical |
| GSC-4-3 | >>Coding Scheme Designator | (0008,0102) | SH | SexParameterForClinicalUse |
| GSC-4-2 | >>Code Meaning | (0008,0104) | LO | Male typical parameters |
|  | *End item* |  |  |  |
| GSC-8 | >SPCU Comment | (0010,xxx1) | LT | Hormonal treatment, use affirmed gender Creatinine reference ranges |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
|  | *Begin item* |  |  |  |
| GSC-5-1 | >>Start DateTime | (0010,xxx6) | DT | 20222071509 |
|  | *End item* |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
|  | *Begin item* |  |  |  |
| GSC-4-1 | >>Code Value | (0008,0100) | SH | Female-typical |
| GSC-4-3 | >>Coding Scheme Designator | (0008,0102) | SH | SexParameterForClinicalUse |
| GSC-4-2 | >>Code Meaning | (0008,0104) | LO | Female typical parameters |
|  | *End item* |  |  |  |
| GSC-8 | >SPCU Comment | (0010,xxx1) | LT | Sex at birth |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
|  | *Begin item* |  |  |  |
| GSC-5-1 | >>Start DateTime | (0010,xxx6) | DT | 197803280000 |
| GSC-5-2 | >>Stop DateTime | (0010,xxx7) | DT | 20220715090000 |
|  | *End item* |  |  |  |
|  | *End item* |  |  |  |
|  | Person Names to Use Sequence | (0010,xxx3) | SQ |  |
|  | *Begin item* |  |  |  |
| PID-5 | >Name to use | (0010,xx12) | LT | Smith, John |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
|  | *Begin item* |  |  |  |
|  | >>Start DateTime | (0010,xxx6) | DT | 20220715090000 |
|  | *End item* |  |  |  |
|  | *End item* |  |  |  |

#### #### 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 | 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 |  |
| -- ITEM 1 -- |  |  |  |  |
|  | >Gender Code Sequence | (0010,xxx4) | SQ |  |
| -- ITEM 1 -- |  |  |  |  |
| 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 |
| Patient.extension [period start] | >Start DateTime | (0010,xxx6) | DT | 20220715010000 |
| serviceRequest.extension [PatSexParameterForClinicalUse] | Sex Parameters for Clinical Use Sequence | (0010,xxx2) | SQ |  |
| -- ITEM 1 -- |  |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| -- ITEM 1 -- |  |  |  |  |
| serviceRequest.extension [value code] | >> Code Value | (0008,0100) | SH | Male-typical **FIX** |
| serviceRequest.extension [value system] | >>Coding Scheme Designator | (0008,0102) | SH | DCM |
| serviceRequest.extension [value display] | >>Code Meaning | (0008,0104) | LO | Male typical parameters |
| serviceRequest.extension [comment] | >SPCU Comment | (0010,xxx1) | LT | Hormonal treatment, use affirmed gender Cr reference ranges |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
| ITEM 1 |  |  |  |  |
| serviceRequest.extension [period start] | >>Start DateTIme | (0010,xxx6) | DT | 20220715090000 |
| serviceRequest.extension [supportingInfo reference] | >SPCU Reference | (0010,xx10) | UR | https://doi.org/10.1210/jendso/bvab048.1607 |
| ITEM 2 |  |  |  |  |
| Sex Parameters for Clinical Use Sequence |  |  |  |  |
|  | >SPCU Code Sequence | (0010,xxx9) | SQ |  |
| -- ITEM 1 -- |  |  |  |  |
| serviceRequest.extension [value code] | >> Code Value | (0008,0100) | SH | Female-typical **FIX** |
| serviceRequest.extension [value system] | >>Coding Scheme Designator | (0008,0102) | SH | DCM |
| serviceRequest.extension [value display] | >>Code Meaning | (0008,0104) | LO | Female typical parameters |
| serviceRequest.extension [comment] | >SPCU Comment | (0010,xxx1) | LT | Sex at birth |
|  | >Validity Period Sequence | (0010,xxx5) | SQ |  |
| ITEM 1 |  |  |  |  |
| serviceRequest.extension [period start] | >>Start DateTIme | (0010,xxx6) | DT | 19780410000000 |
| serviceRequest.extension [period start] | >>Stop DateTIme | (0010,xxx7) | DT | 20220715090000 |
|  | Person Names to Use Sequence | (0010,xxx3) | SQ |  |
| Item 1 |  |  |  |  |
| Patient.name[use=usual] | >Name to use | (0010,xx12) | LT | John Smith |

#### #### Example 04: Imaging Report

See these [examples](v2dicom\_use\_case.html#result-for-imaging) of HL7 v2.9.1 and v2.5 Unsolicited Observation Results containing the narrative from the final [Imaging Report](#reporting).

These will be references to HL7 final version

\*OBX Segments containing Imaging Report Narrative omitted for brevity\*

#### #### Example 05: CDA Release 2 Imaging Report

See this [example](cdadicom\_use\_case.html#cda-dicom) of a CDA [Imaging Report](#reporting).

These will be references to HL7 final version example.

## XX.2 Find Relevant Priors

1. Query by patient ID from MWL/ Order to PACS
   1. Response looks reasonable, proceed to selection by appropriate SOP classes (VT, MR, etc.) (body part, modality, order, etc.) and instances
   2. Response looks insufficient
      1. Try query by birthdate
      2. Try
2. If MWL has name to use (new), query by that name and birthdate
   1. Response looks reasonable, proceed to selection by appropriate SOP classes (VT, MR, etc.)
3. Query by patient name, birthdate from MWL
   1. Response looks reasonable, proceed to selection by appropriate SOP classes (VT, MR, etc.)
4. Query by patient name, sex, ID from MWL
   1. Response looks reasonable, proceed to selection by appropriate SOP classes (VT, MR, etc.)
5. Patient got new name, new ID, and there is some patient link/ patient merge process.

TODO look at IHE stuff around link/merge.

## XX.3 Patient Root vs Study Root

The Patient Module (and other modules at the Patient Level like Clinical Trial Subject) contain attributes that require special consideration. When Patient Root queries are supported, the Patient Level attributes are required to be the same for all SOP instances that apply to that patient. When Study Root queries are supported, these attributes are only required to be the same for SOP Instances referring to the same study. This has implications when:

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

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.

As a result, 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 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)

## XX.4 Examples of Name to use

DICOM uses information about a person’s names for query purposes (e.g., in Modality Worklist Query) and as components of Storage SOP Instances to describe the subject of an examination. DICOM does make some assumptions about likely aspects of naming, but there is usually a need to map the policies and procedures used at one location to the DICOM services and their use.

DICOM does not specify an operational model for patient name behaviors. There are many different cultural procedures regarding the use of names, and within organizations there are a wide variety of procedures and rules regarding the use of names.

The DICOM name attributes are:

Patient’s Name (0010,0010) – a single name 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 and referring to the patient. This name must be the same for all SOP Instances 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 a single study.

Other Patient Names (0010,1001) – optional other names for the patient. These names must be the same for all SOP Instances 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.

Person Names to Use Sequence (0010,xxx3) – optional other names 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 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.

There can also be a difference between the official registered name, and there can also in some unusual circumstances be jurisdictional differences of which name is the official registered name in which jurisdiction.

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 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>. Further, there are unofficial 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 name 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 personal.

The Person Name to Use Sequence includes optional valid 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 can be variable. For example, the HL7 v2.9 encoding of Anton Corbijn’s name might be one 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 a likely mistake)

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

“Corbijn^Anton^^^^” – if a PN, or

“Anton Corbijn” – if an ST.

**TODO** look at the stuff just added as part of archive inventory.

Generic patient reconciliation process.

Day -1: v2 order arrives, PACS and operator retrieve priors

Day 0: PACS/MWL Provider convert v2 order into MWL

Day 0: Modality operator selects priors

Day 0: Modality/PACS provider first guess priors

Example: intentionally anonymous patient with broken arm.

**TODO**  re-read hanging protocol