NHS Digital

Guidance on the use of CodeableConcept

including the Extension-coding-sctdescid

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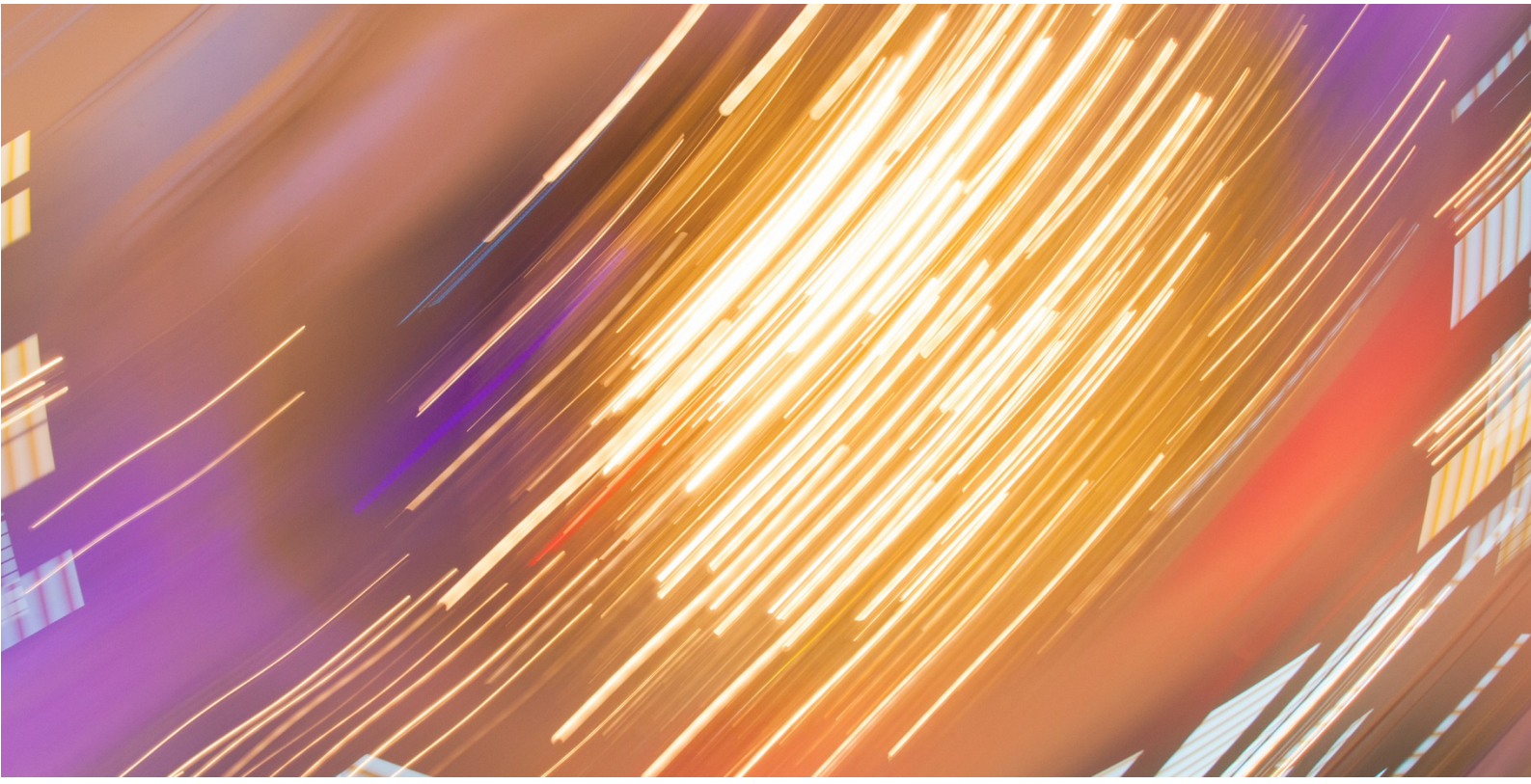

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1. Introduction

The FHIR specification which can be accessed here at the link below states,

“A CodeableConcept represents a value that is usually supplied by providing a reference to one or more terminologies or ontologies but may also be defined by the provision of text. This is a common pattern in healthcare data.”

http://hl7.org/fhir/stu3/datatypes.html#CodeableConcept

NHS Digital has introduced an extension to the base CodeableConcept data type to carry information chosen by the end user (or held in the end users system) that was from the SNOMED CT terminology and cannot be expressed just using the SNOMED CT preferred term and concept Id.

The extent of the CodeableConcept data type (including the Extension-coding-sctdescid extension) is as follows

```
<code>
        <coding>
            <extension url="https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
        sctdescid">
                <extension url="descriptionId">
                    <valueId value=""/>
                </extension>
                <extension url="descriptionDisplay”>
                    <valueString=""/>
                </extension>
            </extension>
            <code value=""/>
            <display value=""/>
            <system value=""/>
            <version value=””/>
            <userSelected value=””/>
        </coding>
        <text/>
</code>
```

1.1 Description of Elements (in terms of SNOMED CT)

<code>	is the wrapper element for the CodeableConcept
<coding>	is the wrapper element for the coded part of the CodeableConcept
<extension>	is the wrapper element for the SNOMED description extension
<extension url="descriptionId">	is the wrapper for the SNOMED CT description identifier
<valueId value=””>	holds the SNOMED CT description identifier
<extension url="descriptionDisplay”>	is the wrapper for the SNOMED CT description display
<valueString="">	holds the SNOMED CT description display
<code value=””>	holds the SNOMED CT concept identifier
<display value="">	holds the SNOMED CT concept display
<system value="">	holds the SNOMED CT system identifier (http://snomed.info/sct)
<version value=””>	is not used for SNOMED CT
<userSelected value=””>	indicates that this concept was chosen by the user

2. Populating the CodeableConcept

This section contains guidance on how to populate each field in the cases where the code carried is/is not a SNOMED code and a number of examples to further illustrate population in different scenarios.

2.1 Field by field population guidance

Level	Field	Directions
1	Coding (SNOMED CT)	Populate this group if a SNOMED CT concept id is recorded with the item
2	System	Set to “http://snomed.info/sct”
2	Code	The SNOMED CT concept id recorded with the item
2	Display	The text of the preferred term of the SNOMED CT concept id. Must not be populated if the SNOMED CT concept id is a translation from another codeset (READ, CTV, etc). Note: The preferred term is not populated for translations as it could potentially confer a meaning that was not intended when the item was originally coded.
2	DescriptionId	The SNOMED CT description id recorded with the item. Only populated if a description id exists.
2	DescriptionDisplay	The text of the description id. Only populated if a description id exists and is not the preferred term
2	Userselected	Set to TRUE if a user selected the SNOMED Code when creating/updating this item, otherwise do not populate
1	Coding (other)	Populate this group if a clinical code other than SNOMED CT is recorded with the item. If there are multiple codes (i.e. the item has been translated multiple times) there is a group entry per code
2	System	Identifies the codeset
2	Code	The clinical code URI associated with the item
2	Display	The text associated with the clinical code
2	DescriptionId	Do not populate (SNOMED CT only)
2	DescriptionDisplay	Do not populate (SNOMED CT only)
2	Userselected	Set to TRUE if a user selected this code when creating/updating this item, otherwise do not populate
1	Text	The original text selected/manually entered by the user for the item. Only populate when there is no user selected codeset with a display or description display recorded. Note: This occurs when either the original entry was not coded or the original coding has been lost.

2.2 Sending a SNOMED CT concept with its associated preferred term

When sending a SNOMED CT ConceptID with its preferred term or if sending a none SNOMED code eg. Read2 or CTV3 then code.coding.code, and code.coding.system SHALL be populated.

Example 1

XML

```
<code>
        <coding>
            <code value="22298006"/>
            <display value="Myocardial infarction"/>
            <system value="http://snomed.info/sct"/>
        </coding>
</code>
```

JSON

```
{
        "code": {
                "coding": {
                        "code": {
                                "@value": 22298006
                        },
                        "display": {
                                "@value": "Myocardial infarction"
                        },
                        "system": {
                                "@value": "http://snomed.info/sct"
                        }
                }
        }
}
```

2.3 Sending a concept where the coding system & code is unknown

In the exceptional case that the code is not known then the code.text element can be populated without the need to populate a coding element.

Example 2

XML

```
<code>
        <text>Myocardial infarction</text>
</code>
```

JSON

```
{
        "code": {
                "text": "Myocardial infarction"
        }
}
```

2.4 Sending a translation set

In the case where the code was entered into the clinical system using a legacy coding system the code is likely to have been mapped to a SNOMED translations. Where these mappings have been created in most cases they will have been mapped to a SNOMED CT ConceptID. In SNOMED ConceptIDs do not have a concept description. They will have a number of associated DecriptionIDs that include a preferred term and a fully specified name. However where mappings have been completed to correspond to a ConceptID there is not a particular description that is mapped and in these cases the description originally entered by the clinician in the legacy coding system is considered to be the clinically relevant text.

Example 3

XML

```
<code>
    <coding>
        <code value="4414.00"/>
        <display value="Serum potassium"/>
        <system value="http://read.info/readv2"/>
        <userSelected value="TRUE"/>                <!--flags the coding originally actually selected
by the user -->
    </coding>
    <coding>
        <system value="http://snomed.info/sct"/>
        <code value="22298006”/>
    </coding>
    <text>Serum potassium level</text>              <!-- what the user saw on screen, from a data entry
template -->
</code>
```

JSON

```
{
        "code": {
                "coding": [
                        {
                                "code": {
                                        "@value": 4414.00
                                },
                                "display": {
                                        "@value": "Serum potassium"
                                },
                                "system": {
                                        "@value": "http://read.info/readv2"
                                },
                                "userSelected": {
                                        "@value": "TRUE"
                                }
                        },
                        {
                                "system": {
                                        "@value": "http://snomed.info/sct"
                                },
                                "code": {
                                        "@value": 22298006
                                }
                        }
                ],
                "text": "Serum potassium level"
        }
}
```

2.5 Sending a descriptionId that is also the preferred term

If the DescriptionID that is being sent represents the preferred term then then there is no need to include the extension for the description display as this would be identical to the term that is sent in code.coding.display.

Example 4

XML

```
<code>
        <coding>
            <extension url="https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
        sctdescid">
                <extension url="descriptionId">
                    <valueId value="37436014"/>
                </extension>
            </extension>
            <code value="22298006"/>
            <display value="Myocardial infarction"/>
            <system value="http://snomed.info/sct"/>
        </coding>
</code>
```

JSON

```
{
        "code": {
                "coding": {
                        "extension": {
                                "@url": "https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
sctdescid",
                                "extension": {
                                        "@url": "descriptionId",
                                        "valueId": {
                                                "@value": 37436014
                                        }
                                }
                        },
                        "code": {
                                "@value": 22298006
                        },
                        "display": {
                                "@value": "Myocardial infarction"
                        },
                        "system": {
                                "@value": "http://snomed.info/sct"
                        }
                }
        }
}
```

2.6 Sending a descriptionID that is not the preferred term

In this case the DescriptionID represents a description that is different to the preferred term and therefore the description will be different to that used to populate the code.coding.display element. In this case the extension for DescriptionDisplay should be populated with the term corresponding to the descriptionID.

Example 5

XML

```
<code>
        <coding>
            <extension url="https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
        sctdescid">
                <extension url="descriptionId">
                    <valueId value="37443015"/>
                </extension>
                <extension url="descriptionDisplay">
                    <valueString value="Heart attack"/>
                </extension>
            </extension>
            <code value="22298006"/>
            <display value="Myocardial infarction"/>
            <system value="http://snomed.info/sct"/>
        </coding>
</code>
```

JSON

```
{
        "code": {
                "coding": {
                        "extension": {
                                "@url": "https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
sctdescid",
                                "extension": [
                                        {
                                                "@url": "descriptionId",
                                                "valueId": {
                                                        "@value": 37443015
                                                }
                                        },
                                        {
                                                "@url": "descriptionDisplay",
                                                "valueString": {
                                                        "@value": "Heart attack"
                                                }
                                        }
                                ]
                        },
                        "code": {
                                "@value": 22298006
                        },
                        "display": {
                                "@value": "Myocardial infarction"
                        },
                        "system": {
                                "@value": "http://snomed.info/sct"
                        }
                }
        }
}
```

2.7 Sending a descriptionId NOT in the UK Edition, but for a conceptId that IS in the UK Edition.

Includes the case where the descriptionid is locally declared to be the preferred term.

Example 6

XML

```
<code>
        <coding>
            <extension url="https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
        sctdescid">
                <extension url="descriptionId”>
                    <valueId value="787121000006116"/>
                </extension>
                <extension url="descriptionDisplay">
                    <valueString value="Ideal weight"/>
                </extension>
            </extension>
            <code value="170804003"/>
            <display value="Ideal body weight"/>
            <system value="http://snomed.info/sct"/>
        </coding>
</code>
```

JSON

```
{
        "code": {
                "coding": {
                        "extension": {
                                "@url": "https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
sctdescid",
                                "extension": [
                                        {
                                                "@url": "descriptionId",
                                                "valueId": {
                                                        "@value": 787121000006116
                                                }
                                        },
                                        {
                                                "@url": "descriptionDisplay",
                                                "valueString": {
                                                        "@value": "Ideal weight"
                                                }
                                        }
                                ]
                        },
                        "code": {
                                "@value": 170804003
                        },
                        "display": {
                                "@value": "Ideal body weight"
                        },
                        "system": {
                                "@value": "http://snomed.info/sct"
                        }
                }
        }
}
```

2.8 Sending a descriptionId and conceptId where NEITHER is in the UK Edition

Example 7

XML

```
<code>
        <coding>
            <extension url="https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
        sctdescid">
                <extension url="descriptionId">
                    <valueId value="2537902210000087110"/>          <!-- descriptionid from Canadian
        extension -->
                </extension>
                <extension url="descriptionDisplay”>
                    <valueString value="Use of illicit drugs unknown"/>   <!-- synonym from Canadian
        extension -->
                </extension>
            </extension>
            <code value="186782131000087106"/>                      <!-- conceptId from Canadian
        extension -->
            <display value="Use of illicit type drug unknown"/>     <!-- preferred term from Canadian
        extension -->
            <system value="http://snomed.info/sct"/>
        </coding>
        <text> Not known whether uses illicit drugs</text>          <!-- what the user saw on screen,
from a data entry template -->
</code>
```

JSON

```
{

        "code": {
                "coding": {
                        "extension": {
                                "@url": "https://fhir.hl7.org.uk/STU3/StructureDefinition/Extension-coding-
sctdescid",
                                "extension": [
                                        {
                                                "@url": "descriptionId",
                                                "valueId": {
                                                        "@value": 253790221000087110
                                                }
                                        },
                                        {
                                                "@url": "descriptionDisplay",
                                                "valueString": {
                                                        "@value": "Use of illicit drugs unknown"
                                                }
                                        }
                                ]
                        },
                        "code": {
                                "@value": 186782131000087106
                        },
                        "display": {
                                "@value": "Use of illicit type drug unknown"
                        },
                        "system": {
                                "@value": "http://snomed.info/sct"
                        }
                },
                "text": " Not known whether uses illicit drugs"
        }
}
```

3. Importing data from a CodeableConcept

3.1 Processing of codes

When processing an item, the receiving system may choose to store/display/propagate any or all of the clinical codes associated with the item.

Where the receiving system does not understand any of the supplied codes associated with the item (or no clinical codes were supplied), it may choose to record the item under a degraded code. The appropriate SNOMED degrade code should be used within the system to store/display the code.

Degraded Drug Allergies	196461000000101 - Transfer-degraded drug allergy
Degraded Non-Drug Allergies	196471000000108 - Transfer-degraded non-drug allergy
Degraded Medications	196421000000109 - Transfer-degraded medication entry

3.2 Processing of text

When processing an item, the receiving system MUST always store/display/propagate the original term text of the item. That is the text chosen/manually entered by the clinician/user to describe the item they are recording. Failure to do this could result in the intended meaning of the item being altered.

The original term text will be available in one of the following fields in order of descending priority:

1. Text
2. Coding.DescriptionDisplay where Userselected = TRUE
3. Coding.Display where Userselected = TRUE

Where the receiving system can derive the original term text from the clinical code and the derived text lexically identical to the term the user entered, then the receiving system is not required to store the text separately.

3.3 Processing single codes

Where there is only one coding element and the receiving system understands the code then:

- The code MAY be processed by the system; and
- The rubric contained in code.coding.descriptiondisplay (or code.coding.display where descriptiondisplay does not exist) MUST be stored/propagated/clearly displayed to end users.

3.4 Dealing with translations

Where there is more than one code and the receiving system chooses to process the user entered code then it MUST be processed as per the single code rules defined above.

Where there is more than one code and the receiving system chooses to process a code that was not user entered and:

- the term of the code being processed is lexically identical to the term of the user entered code then it MUST be processed as per the single code rules defined above.
- the term of the code being processed is not lexically identical to the term of the user entered code then
    - The code MAY be processed by the system; and
    - The originally entered term MUST be stored/propagated/clearly displayed to end users.

3.5 Dealing with codes that are not understood

If none of the codes received can be understood by the system then the code where UserSelected='TRUE' MAY be degraded to text and displayed to the user. The term (If present Extension-coding-sctdescid.descriptionDisplay otherwise code.coding.display) from the UserSelected code MUST be preserved for propagation onwards in future messaging. The appropriate SNOMED degrade code should be used within the system to display the code to the user. (Do we need more degrade codes?)

Degraded Drug Allergies	294801000000114 - Transfer-degraded drug allergy
Degraded Non-Drug Allergies	294821000000117 - Transfer-degraded non-drug allergy
Degraded Medications	294711000000118 - Transfer-degraded medication entry

3.6 Processing and propagating code.text

When data is received and code.text is populated then the receiving system MUST store/propagate/display this to the user. It can do this either by displaying the text without a code, using an appropriate degrade code if none of the received codes are understood or by displaying the text adjacent to the imported code.

3.7 Storing and propagating received DescriptionIDs

In the situation where the receiving system is integrating an incoming code and it receives a UserSelected DescriptionID that it does not understand it MUST store the DescriptionID and persist it in such a way that it can be propagated onwards if the data is ever exported.