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Clinical Terminology

Guidance for Use of Medical Nomenclatures in Information Exchange v1.0

12 August 2014

Approved for external use

Document ID: NEHTA-1788:2014

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Acknowledgement

The National E-Health Transition Authority is jointly funded by the Australian Government and all State and Territory Governments.

Document information

Key information

Owner	Head of National Services Operation and Management
Document generation details	Word Publisher version : 2.113 Generated date : 19/05/2014 10:42 AM
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1 Introduction

1.1 Purpose

This document provides guidance for healthcare software systems that produce and consume clinical messages containing medical nomenclatures. This guidance helps software developers to manage risks when developing healthcare software systems using medical nomenclatures for the purpose of supporting healthcare delivery through the exchange of clinical information.

1.2 Intended audience

This document is primarily directed towards:

- healthcare software vendors;
- vendors using clinical coding system products; and
- healthcare jurisdictions and healthcare providers.

1.3 Scope

This document is primarily concerned with the use of medical nomenclatures for the purpose of unambiguously describing the care and treatment of healthcare recipients pertaining to diseases, signs, disorders, symptoms, procedures, treatments, medications, anatomy, findings, causes, complaints, clinical test results and so on. These include, but are not limited to:

- Terminologies such as the AMT, SNOMED CT-AU[1], or other local or proprietary terminologies.
- Drug information systems.
- Classification systems such as ICD-10-AM[2] and Australian Classification of Health Interventions (ACHI) or other local or proprietary classifications.
- Code systems such as LOINC or other local or proprietary code standards.
- Schedules or listings such as the Schedule of Pharmaceutical Benefits.

Future releases of this document may include additional medical nomenclatures.

The term 'coding system' is hereafter used when referring to one or more of the abovementioned medical nomenclatures.

The scope of this document does not mandate that all clinical statements that are present in outbound CDA documents and messages to be encoded, but rather where they are encoded, the healthcare software should implement the relevant software requirements.

[1] IHTSDO®, SNOMED® and SNOMED CT® are registered trademarks of the IHTSDO.
[2] ICD-10-AM is the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification

1.4 Conformance

Software developers may want to claim that their software implements this clinical terminology guidance. For such claims to be meaningful and for the healthcare community to have a shared understanding of these claims, the clinical terminology guidance has been documented in the form of software requirements using the standard verbs **shall**, **shall not**, **should**, **should not** and **may**.

Although adoption of the guidance provided by this document is not a prerequisite for software to be granted access to the personally controlled electronic health record (PCEHR) system, adoption is strongly encouraged. Any software developer wanting to claim that they have implemented the clinical terminology guidance must have software that implements all mandatory and applicable conditional requirements in this document (that is, the requirements using the verbs **shall** and **shall not**).

1.5 Related documents

The following documents may be relevant for healthcare software vendors, healthcare jurisdictions and healthcare providers that also implement healthcare software systems in accordance with this specification:

- *HL7 Clinical Document Architecture, Release 2, HL7 Version 3 Standard* [HL72004]
- Conformance profiles for clinical documents[3]
- *Clinical Information Systems Connecting to the PCEHR System – Conformance Assessment Scheme* [NEHTA2012a]
- Clinical document structured specifications and CDA implementation guides[3]
- *Clinical Terminology – Guidance for People and Processes* [NEHTA2014a]
- *Clinical Terminology – Guidance for Use in Healthcare Software* [NEHTA2014b]
- *Clinical Terminology – Guidance for Use of Medical Nomenclatures in Information Exchange* [NEHTA2014c]
- *Representing Coding in CDA Documents - Implementation Guide* [NEHTA2011]

[3] Available from http://www.nehta.gov.au/implementation-resources/clinical-documents

2 Clinical messaging

2.1 Outbound messaging

The requirements in this section apply to healthcare software systems producing outbound CDA documents or clinical messages containing encoded concepts from a coding system. The section is divided into requirements related to authoring of outbound CDA documents and requirements related to the authoring of outbound messages other than CDA documents (for example, HL7 v2 or any other messaging standard).

2.1.1 CDA documents

020638 Encoding concepts in a CDA document

If the healthcare software system generates outbound CDA documents containing encoded concepts from a coding system that is used as a native interface terminology in the healthcare software system, it **shall** include the following CDA attribute values for each concept in the CDA document:

- Concept identifier as *code*;
- HL7-registered OID of the coding system as *codeSystem*;
- Description as *displayName*; and
- Original text that was displayed to the user, and recorded as *originalText*.

Priority Conditional

Additional Notes

This requirement is derived from the NEHTA clinical document specifications[4]. The intent of this requirement is to ensure that the original meaning of the clinical statement is not lost during the authoring of a CDA document.

The *originalText* CDA attribute value will be the same as the displayName value in the case where the coding system is used as a native interface terminology in the healthcare software system.

Where the coding system is AMT or SNOMED CT-AU, the description must be the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

This requirement also promotes interoperability through a standard method of presenting clinical information in information exchange.

The HL7 Object Identifiers (OIDs) are registered at http://www.hl7.org/oid/index.cfm as follows:

- SNOMED CT-AU OID (“2.16.840.1.113883.6.96”);
- AMT version 3 OID (“2.16.840.1.113883.6.96”), (same as SNOMED CT-AU);
- AMT version 2 (“1.2.36.1.2001.1004.100”);
- LOINC (“2.16.840.1.113883.6.1”); or

[4] Available from http://www.nehta.gov.au/implementation-resources/clinical-documents

- PBS Item Codes ("1.2.36.1.2001.1005.22").

Any other coding system must also be registered with the HL7 OID Registry when in use.

020639 Encoding mapped concepts in a CDA document

If the healthcare software system generates outbound CDA documents containing encoded concepts from a coding system with translations (that is, mapping), it **shall** include the following information for each mapped concept in the CDA document.

The source coding system concept details:

- Concept identifier as *code* (if available);
- HL7-registered OID as *codeSystem*;
- Description as *displayName*; and
- Original text that was displayed to and recorded by the user as *originalText*.

The mapped/translated *target* coding system concept stored as code *translation*, with the following details:

- Concept identifier as *code*;
- HL7-registered OID of the coding system as *codeSystem*; and
- Description as *displayName*.

Priority Conditional

Additional Notes

This requirement is derived from the NEHTA clinical document specifications[5]. The intent of this requirement is to ensure that the original meaning of the clinical statement and the translation is not lost during the authoring of a CDA document. It also promotes interoperability between systems supporting different coding systems and a standard method of presenting clinical information in information exchange.

Where the coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

The translation must not have an *originalText* entry.

The HL7 Object Identifiers (OIDs) are registered at http://www.hl7.org/oid/index.cfm as follows:

- SNOMED CT-AU OID ("2.16.840.1.113883.6.96");
- AMT version 3 OID ("2.16.840.1.113883.6.96"), (same as SNOMED CT-AU);
- AMT version 2 ("1.2.36.1.2001.1004.100").
- LOINC ("2.16.840.1.113883.6.1");
- PBS Item Codes ("1.2.36.1.2001.1005.22").

[5] Available from http://www.nehta.gov.au/implementation-resources/clinical-documents

Any other coding system must also be registered with the HL7 OID Registry when in use.

020641 Post-coordinated expressions in outbound CDA documents

If the healthcare software system supports the use of AMT v3 or SNOMED CT-AU post-coordinated expressions for recording and storing clinical statements and generates an outbound CDA document containing such post-coordinated expressions, it **shall** include the following information for each post-coordinated expression in the content of the outbound CDA document:

- The expression adhering to the SNOMED CT compositional grammar in the *SNOMED CT Technical Implementation Guide* [IHTSDO2014a] as the machine-readable content as *code*;
- HL7-registered OID of the coding system as *codeSystem*; and
- The original text seen by the user recording the expression in a human-readable format as *originalText*.

There **shall not** be a *displayName*, since there is none defined for an expression.

Priority Conditional

Additional Notes

The intent of this requirement is to ensure that the original meaning of the clinical statement is not lost during the authoring of a CDA document.

In addition, the intent of this requirement is to avoid expressions written by the user or generated by the healthcare software system that are nonsensical or contradictory in nature, reducing the risk of misinterpreting clinical statements or using incorrect statements in making clinical decisions. Generating expressions that comply with the SNOMED CT compositional grammar allows expressions to be represented as a text string that can be carried in messages, allowing receiving systems to reliably process or parse those expressions.

The SNOMED CT compositional grammar by IHTSDO provides syntax for describing SNOMED CT post-coordinated expressions in a standardised machine processable format in eHealth messages [IHTSDO2014a]. The original text serves the purpose of human readability. Where any combination of GUI controls (graphical or workflow-based, with or without explicit text) are used in authoring post-coordinated expressions, the *originalText* must contain the values from all those sources to faithfully capture the meaning of the expression as intended by the author and as depicted through the healthcare software system

Organisations should be aware that current eHealth CDA specifications[6] do not allow post-coordinated expressions to be encoded. For example, all *CodeableText* data type elements specified in CDA specifications require the coded concepts to belong to a member of the relevant coding system and where specified the relevant reference sets.

The HL7 Object Identifiers (OIDs) are registered at http://www.hl7.org/oid/index.cfm as follows:

- SNOMED CT-AU OID (“2.16.840.1.113883.6.96”);

[6] Available from http://www.nehta.gov.au/implementation-resources/clinical-documents

- AMT version 3 OID ("2.16.840.1.113883.6.96"), (same as SNOMED CT-AU).

Note: AMT v2 post-coordination is not supported and not recommended.

020642 CDA document containing free text and encoded concepts

If the healthcare software system supports the capability to record a concept together with entering free text (that is, where the concept and free text constitutes a single clinical statement or expression), with a distinction between the concept and free text, and generates outbound CDA documents containing such a clinical statement, the CDA document **shall** contain the following for that clinical statement:

- Concept identifier of the selected concept displayed to the user as *code*;
- HL7-registered OID of the coding system of the selected concept as *codeSystem*;
- Concept description as *displayName*;
- Original text; that is, the concept description and user-entered free text that accurately reflects the way it was compiled by the author, encoded as *originalText*; and
- If a map exists, a translation containing the concept identifier, HL7-registered OID, and description of the *target* coding system.

Priority Conditional

Additional Notes

This requirement promotes interoperability through a standard method of presenting clinical information in information exchange. It also intends to reduce the risk of creating CDA documents containing incorrectly-encoded clinical statements originating from data fields where concepts and free text were recorded to represent a clinical statement.

An example of this practice would be where the software allows a user to select a concept, and also offers a text box next to the selected concept where 'additional information' can be entered. This would enable a user to pick a code for 'bacterial infection' and enter the kind of bacteria as a note (free text). In effect, this allows some informal post-coordination. In this case, the description for the selected concept displayed to the user in the GUI and the free text entered in a separate field are combined as a single expression and coded as original text. The selected concept is coded with the correct concept identifier, coding system indicator, and concept description, but the 'additional information' remains as free text as part of the original text. Although this requirement suggests that it might be an option for the healthcare software system to support users to record a concept with user-entered free text, this practice is strongly discouraged. It may lead to user-entered free text that refines, broadens or even contradicts the meaning of the associated concept, which is something that should be avoided. This can lead to confusion by those interpreting the clinical statement.

From a coding perspective, this type of functionality introduces obstacles to accurately represent the clinical statement as it was perceived and intended by the author. The way in which the GUI was designed and used by the user in recording a clinical statement will influence how and what information is recorded and the

author's interpretation of its meaning. Furthermore, clinical safety risks may arise where decision-support algorithms make use of the encoded concept without the original text, or the manner in which the clinical statement is presented to users through information exchange.

Where the source or target coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

The HL7 Object Identifiers (OIDs) are registered at http://www.hl7.org/oid/index.cfm as follows:

- SNOMED CT-AU OID ("2.16.840.1.113883.6.96");
- AMT version 3 OID ("2.16.840.1.113883.6.96"), (same as SNOMED CT-AU);
- AMT version 2 ("1.2.36.1.2001.1004.100").
- LOINC ("2.16.840.1.113883.6.1");
- PBS Item Codes ("1.2.36.1.2001.1005.22").

Any other coding system must also be registered with the HL7 OID Registry when in use.

020643 Customised terminology descriptions in CDA documents

If the healthcare software system displays customised terminology descriptions (CTDs) in the GUI for recording and storing, and generates CDA documents containing such clinical statements, the CDA documents **shall** contain the following for each clinical statement:

- Concept identifier as *code*;
- HL7-registered OID of the coding system as *codeSystem*;
- Description as *displayName*; and
- CTD text displayed to and recorded by the user as *originalText*.

Priority Conditional

Additional Notes

The intent of this requirement is to reduce the risk of the healthcare software system creating CDA documents with incorrectly represented concepts based on CTDs and to ensure that the original meaning of the concept is maintained.

Where the coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

This requirement also promotes interoperability through a standard method of presenting clinical information in information exchange.

The HL7 Object Identifiers (OIDs) are registered at http://www.hl7.org/oid/index.cfm as follows:

- SNOMED CT-AU OID ("2.16.840.1.113883.6.96");
- AMT version 3 OID ("2.16.840.1.113883.6.96"), (same as SNOMED CT-AU);

- AMT version 2 ("1.2.36.1.2001.1004.100").
- LOINC ("2.16.840.1.113883.6.1");
- PBS Item Codes ("1.2.36.1.2001.1005.22").

Any other coding system must also be registered with the HL7 OID Registry when in use.

022524 AMT version 2 coding system versions in CDA documents

If the healthcare software system generates outbound CDA documents containing the *codeSystemVersion* of an encoded AMT version 2 concept, the version **shall** be that of the AMT release in use at the time when the clinical statement was stored in the healthcare software system. The version **shall** be in a '2.x' format, where x is a multi-digit value.

Priority Conditional

Additional Notes

The intent of this requirement is to promote a consistent approach to defining coding system versions where specified, allowing receiving systems to correctly process those concepts where rules are built around coding system release versions.

022525 SNOMED CT-AU and AMT version 3 coding system versions in CDA documents

If the healthcare software system generates outbound CDA documents containing the *codeSystemVersion* of an encoded AMT version 3 or SNOMED CT-AU concept, the version **shall** be that of the AMT or SNOMED CT-AU release in use at the time when the clinical statement was stored in the healthcare software system. The version **shall** be in the format specified by the relevant specifications of the particular CDA document type. Where the specifications do not define a format, the *codeSystemVersion* **shall** use the following format:

http://snomed.info/sct/{moduleId}/version/{effectiveTime}

where *{moduleId}* **shall** either be

- 32506021000036107 for SNOMED CT-AU or
- 900062011000036108 for AMT version 3;

and *{effectiveTime}* **shall** be

- the date associated with the version of the data in a specific release of SNOMED CT-AU or AMT version 3 as specified in the corresponding release note; and
- in the format 'YYYYMMDD'.

Priority Conditional

Additional Notes

The intent of this requirement is to promote a consistent approach to using coding system versions, allowing receiving systems to correctly process those concepts where rules are built around coding system release versions.

The format described above was defined by IHTSDO; it enables healthcare software systems to differentiate between AMT version 3 codes, SNOMED CT-AU codes, SNOMED CT code or other SNOMED CT extensions [IHTSDO2014b].

Examples:

- The May 2014 release of SNOMED CT-AU would have the following *codeSystemVersion* value: http://snomed.info/sct/32506021000036107/version/20140531
- The June 2014 release of AMT version 3 would have the following *codeSystemVersion* value: http://snomed.info/sct/900062011000036108/version/20140630

Note: The date associated with the version of the data in a specific SNOMED CT-AU or AMT version 3 release is separate to the publication date of the corresponding release.

2.1.2 Non-CDA messages

020644 Encoding mapped concepts in a non-CDA message

If the healthcare software system generates outbound non-CDA messages containing encoded concepts from a coding system with translations (that is, mapping), it **shall** include the following information for each mapped concept in the non-CDA message:

The source coding system concept details:

- Concept identifier (if available);
- Coding system indicator;
- Description (mandatory only if supported by the relevant message specification or standard); and
- Original text displayed to and recorded by the user.

The mapped or translated *target* coding system concept stored as code *translation*, with the following details:

- Concept identifier;
- Coding system indicator; and
- Description.

Priority Conditional

Additional Notes

The intent of this requirement is to ensure that the original meaning of the clinical statement and the translation is not lost during the authoring of a clinical message. It also promotes interoperability between systems supporting different coding systems and a standard method of presenting clinical information in information exchange.

Where the source or target coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

020645 Encoding concepts in a non-CDA message

If the healthcare software system generates outbound non-CDA messages containing encoded concepts from a coding system that is used as a native interface terminology in the healthcare software system, it **shall** include the following information, where supported by the messaging specification or standard, for each concept in the message:

- Concept identifier;
- Coding system indicator;
- Description (mandatory only if supported by the relevant message specification or standard); and
- Original text that was displayed to, and selected by or recorded by the user in a human-readable format.

Priority Conditional

Additional Notes

The intent of this requirement is to ensure that the original meaning of the clinical statement is not lost during the authoring of a clinical message.

This requirement is not an attempt to specify detailed coding requirements for all possible message content specifications other than CDA. This is merely a minimum requirement to carry the user's intended meaning pertaining to a clinical statement; therefore, the organisation is encouraged to code concepts in a way that meets the relevant message or NEHTA specifications.

This requirement promotes interoperability through a standard method of presenting clinical information in information exchange.

Where the coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

020646 Post-coordinated expressions in outbound non-CDA messages

If the healthcare software system supports the use of AMT v3 or SNOMED CT-AU post-coordinated expressions for recording and storing clinical statements and generates an outbound non-CDA message containing such post-coordinated expressions, it **shall** include the following information for each post-coordinated expression in the content of an outbound message:

- The expression adhering to the SNOMED CT compositional grammar in the *SNOMED CT Technical Implementation Guide* [IHTSDO2014a] as the machine-readable content;
- the coding system indicator; and
- the original text seen by the user recording the expression in a human-readable format.

There **shall not** be a description (that is, *displayName* equivalent), since there is none defined for an expression.

Priority Conditional

Additional Notes

The intent of this requirement is to ensure that the original meaning of the clinical statement is not lost during the authoring of a clinical message.

In addition, the intent of this requirement is to avoid expressions written by the user or generated by the healthcare software system that are nonsensical or

contradictory in nature, reducing the risk of misinterpreting clinical statements or using incorrect statements in making clinical decisions. Generating expressions that comply with the SNOMED CT compositional grammar allows expressions to be represented as a text string that can be carried in messages, allowing receiving systems to reliably process or parse those expressions.

The SNOMED CT compositional grammar by IHTSDO provides syntax for describing SNOMED CT post-coordinated expressions in a standardised machine processable format in eHealth messages [IHTSDO2014a]. The original text serves the purpose of human readability. Where any combination of GUI controls (graphical or workflow-based, with or without explicit text) are used in authoring post-coordinated expressions, the original text must contain the values from all those sources to faithfully capture the meaning of the expression as intended by the author and as depicted through the healthcare software system.

Implementers should be aware that most systems sending and receiving HL7 v2 messages impose some length limit on codes, and most will not be able to correctly store an expression, let alone process it correctly. Post-coordinated expressions should only be exchanged in contexts where it is known that this is safe.

The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

Note: AMT v2 post-coordination is not supported and not recommended.

020647 Non-CDA message containing free text and encoded concepts

If the healthcare software system supports the capability to record a concept together with entering free text (that is, where the concept and free text constitutes a single clinical statement or expression), with a distinction between the concept and free text, and generates an outbound non-CDA message containing an

clinical statement, the message **shall** contain the following for that clinical statement:

- Concept identifier of the selected concept displayed to the user.
- Coding system indicator of the selected concept.
- Concept description (mandatory only if supported by the relevant message specification or standard).
- Original text; that is, the concept description and user-entered free text that accurately reflects the way it was compiled by the author, encoded in a human-readable format.

If a map exists, a translation **shall** contain the concept identifier, coding system indicator, and description of the *target* coding system.

Priority Conditional

Additional Notes

This requirement promotes interoperability through a standard method of presenting clinical information in information exchange. It also intends to reduce the risk of creating messages containing incorrectly-encoded clinical statements originating from data fields where concepts and free text were recorded to represent a clinical statement.

An example of this practice would be where the software allows a user to select a concept, and also offers a text box next to the selected concept where 'additional information' can be entered. This would enable a user to select a concept for 'bacterial infection' and enter the kind of bacteria as a note (free text). In effect, this allows some informal post-coordination. In this case, the description for the selected concept displayed to the user in the GUI and the free text entered in a separate field are combined as a single expression and coded as original text. The selected concept is coded with the correct concept identifier, coding system indicator, and description, but the 'additional information' remains as free text as part of the original text.

Although this requirement suggests it might be an option for the healthcare software system to support users to record a concept with user-entered free text, this practice is strongly discouraged. It may lead to user-entered free text that refines, broadens or even contradicts the meaning of the associated concept, which is something that should be avoided. This can lead to confusion by those interpreting the clinical statement. From a coding perspective, this type of functionality introduces obstacles to accurately representing the clinical statement as it was perceived and intended by the author. The way in which the GUI was designed and used by the user in recording a clinical statement will influence how and what information is recorded and the author's interpretation of its meaning. Furthermore, clinical safety risks may arise where decision-support algorithms make use of the encoded concept without the original text, or the manner in which the clinical statement is presented to users through information exchange.

This requirement is not an attempt to specify detailed coding requirements for all possible message content specifications other than CDA. This is merely a minimum requirement to carry the user's intended meaning pertaining to a clinical statement; therefore, the organisation is encouraged to code concepts in a way that meets the relevant message or NEHTA specifications.

Where the source or target coding system is AMT or SNOMED CT-AU, the description is the preferred term. AMT v3 and SNOMED CT-AU preferred terms are identified in the NCTIS-released language reference sets.

Where the coding system is AMT or SNOMED CT-AU, the description is the preferred term. The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

020648 Customised terminology descriptions (CTDs) in non-CDA messages

If the healthcare software system displays CTDs in the GUI for recording and storing, and generates non-CDA messages containing such clinical statements, the message **shall** contain the following for each clinical statement:

- Concept identifier;
- Coding system indicator;
- Description (mandatory only if supported by the relevant message specification or standard); and
- CTD text (that is, original Text) displayed to and recorded by the user.

Priority Conditional

Additional Notes

The intent of this requirement is to reduce the risk of the healthcare software system creating non-CDA messages with incorrectly represented concepts using CTDs and to ensure the original meaning of the concept is maintained.

This requirement also promotes interoperability through a standard method of presenting clinical information in information exchange.

This requirement is not an attempt to specify detailed coding requirements for all possible message content specifications other than CDA. This is merely a minimum

requirement to carry the user's intended meaning pertaining to a clinical statement; therefore, the organisation is encouraged to code concepts in a way that meets the relevant message or NEHTA specifications.

Where the coding system is AMT or SNOMED CT-AU, the description is the preferred term. The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

022526 AMT version 2 coding system versions in non-CDA messages

If the healthcare software system generates outbound non-CDA messages containing the coding system version of an encoded AMT version 2 concept, the version **shall** be that of the AMT release in use at the time when the clinical statement was stored in the healthcare software system. The version **shall** be in a '2.x' format, where x is a multi-digit value.

Priority Conditional

Additional Notes

The intent of this requirement is to promote a consistent approach to defining coding system versions where specified, allowing receiving systems to correctly process those concepts where rules are built around coding system release versions.

022527 SNOMED CT-AU and AMT version 3 coding system versions in non-CDA messages

If the healthcare software system generates outbound non-CDA messages containing the coding system version of an encoded AMT version 3 or SNOMED CT-AU concept, the version **shall** be that of the AMT or SNOMED CT-AU release in use at the time when the clinical statement was stored in the healthcare software system. The version **shall** be in the format specified by the relevant

message specification or standard. Where the message specification or standard does not define a format, the coding system version **shall** use the following format:

http://snomed.info/sct/{moduleId}/version/{effectiveTime}

where *{moduleId}* **shall** either be

- 32506021000036107 for SNOMED CT-AU or
- 900062011000036108 for AMT version 3;

and *{effectiveTime}* **shall** be

- the date associated with the version of the data in a specific release of SNOMED CT-AU or AMT version 3 as specified in the corresponding release note; and
- in the format 'YYYYMMDD'.

Priority Conditional

Additional Notes

The intent of this requirement is to promote a consistent approach to using coding system versions where specified, allowing receiving systems to correctly process those concepts where rules are built around coding system release versions.

The format was defined by IHTSDO and enables healthcare software systems to differentiate between AMT version 3 codes, SNOMED CT-AU codes, SNOMED CT code or other SNOMED CT extensions [IHTSDO2014b].

Examples:

- The May 2014 release of SNOMED CT-AU would have the following coding system version value:
  http://snomed.info/sct/32506021000036107/version/20140531
- The June 2014 release of AMT version 3 would have the following coding system version value:
  http://snomed.info/sct/900062011000036108/version/20140630

Note: The date associated with the version of the data in a specific SNOMED CT-AU or AMT version 3 release is separate to the publication date of the corresponding release.

2.2 Inbound messaging

The requirements in this section apply to healthcare software systems extracting and processing encoded coding system concepts from inbound CDA documents or non-CDA messages (for example, HL7 v2 or any other messaging standard).

2.2.1 CDA documents

020649 Storing a concept extracted from an inbound CDA document

If the healthcare software system supports extracting concepts from coded elements in inbound CDA documents and storing the concepts separately, the healthcare software system **shall** extract and store the following concept information while maintaining its context as presented in the inbound document:

- *originalText*; and

- The following concept details for all, or any recognised code or coding system pairs from the code element and its translations:
  - *code*; and
  - *codeSystem*.

Where the healthcare software system extracts and stores a code and codeSystem for which it does not have a current and valid predefined description (displayName), it **shall** also store the *displayName* of that concept.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author and to support the use of this extracted data for internal use or for outbound CDA document.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

020651 Storing a post-coordinated expression extracted from an inbound CDA document

If the healthcare software system supports extracting post-coordinated expressions from CDA documents and storing the expressions separately, it **shall** extract and store the original text associated with each expression while maintaining its context as presented in the inbound message.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author and to support the use of this extracted data for internal use or for outbound messaging.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

020652 Displaying the stored concepts extracted from an inbound CDA document

If the healthcare software system supports displaying concepts extracted from inbound CDA documents, it **shall** display the original text, associated with each concept while maintaining the original intended semantic context. If the original text (*originalText* equivalent) is not available, it **shall** display the concept

description instead (*displayName* equivalent). Where the healthcare software system displays the concept description along with the original text, it **shall** be clearly labelled accordingly so the user clearly distinguishes between the original text and the description.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the CDA document author, and to ensure that the display name is not mistaken from the original text recorded by the author.

The need to display the description along with the original text may arise in order to reduce risks of misinterpretation from the use of the concept by knowledge-support and decision-support protocols as well as through human interpretation.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

020653 Displaying the stored post-coordinated expressions from an inbound CDA document

If the healthcare software system supports displaying post-coordinated expressions extracted from an inbound CDA document, it **shall** display the original text associated with each expression while maintaining the original intended semantic context. Where the healthcare software system displays the expression, it **shall** be labelled accordingly so the user clearly distinguishes between the original text and the expression.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the CDA document author, and to ensure that the post-coordinated expression is not mistaken from the original text recorded by the author.

In order to promote the correct use of extracted expressions, the apparent semantic context should be stored and displayed explicitly with the extracted expressions. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

2.2.2 Non-CDA messages

020654 Storing a concept extracted from an inbound non-CDA message

If the healthcare software system supports extracting encoded concepts from non-CDA messages and storing the concepts separately, the healthcare software system

shall extract and store the following concept information while maintaining its context as presented in the inbound message:

- original text; and
- the following concept details for all, or any recognised concept identifier/coding system indicator pairs from the source and mapped or translated target coding systems:
  - concept identifier; and
  - coding system indicator.

Where the healthcare software system extracts and stores a concept identifier and coding system indicator for which it does not have a current and valid predefined description, it **shall** also store the description of that concept.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author and to support the use of this extracted data for internal use or for outbound messaging.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

The coding system indicator refers to information allowing the concept represented in the message to be classified as part of a specific coding system. Where applicable, this may be accomplished by using one of the following:

- An OID:
  - "2.16.840.1.113883.6.96" for SNOMED CT-AU
  - "2.16.840.1.113883.6.96" for AMT version 3 (same as SNOMED CT-AU)
  - "1.2.36.1.2001.1004.100" for AMT version 2
  - "2.16.840.1.113883.6.1" for LOINC
  - "1.2.36.1.2001.1005.22" for PBS Item Codes
- An HL7 v2 table 396 code:
  - 'SCT' for SNOMED CT-AU
  - 'AMTv2' for AMT version 2
  - 'SCT' for AMT version 3
  - 'LN' for LOINC
- A unique coding system namespace or some other coding system identifier defined by a relevant standard or specification or registered with a national or international registry (for example, HL7 OID Registry).

020664 Storing a post-coordinated expression extracted from an inbound non-CDA message

If the healthcare software system supports extracting post-coordinated expressions from inbound messages and storing the expressions separately, it **shall** extract and store the original text associated with each expression while maintaining its context as presented in the inbound message.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author and to support the use of this extracted data for internal use or for outbound messaging.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

020665 Displaying the stored concepts extracted from an inbound non-CDA message

If the healthcare software system supports displaying concepts extracted from inbound non-CDA messages, it **shall** display the original text, associated with each concept while maintaining the original intended semantic context. If the original text (CDA *originalText* equivalent) is not available, it **shall** display the concept description instead (CDA *displayName* equivalent). Where the healthcare software system displays the concept description along with the original text, it **shall** be clearly labelled accordingly so the user clearly distinguishes between the original text and the description.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author, and to ensure that the concept description is not mistaken from the original text recorded by the author.

To avoid risks of misinterpretation, the need to display the description along with the original text may arise from the use of the concept by knowledge-support and decision-support protocols as well as through human interpretation.

In order to promote the correct use of extracted clinical statements, the apparent semantic context should be stored and displayed explicitly with the extracted concept. For example, where a concept 'diabetes mellitus' is encoded under the heading 'Family history', the healthcare software system must store the concept under the same or similar category or label. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

022316 Displaying the stored post-coordinated expressions from an inbound non-CDA message

If the healthcare software system supports displaying post-coordinated expressions extracted from an inbound non-CDA message, it **shall** display the original text associated with each expression while maintaining the original intended semantic context. Where the healthcare software system displays the expression, it **shall** be labelled accordingly so the user clearly distinguishes between the original text and the expression.

Priority Conditional

Additional Notes

The intent of this requirement is to maintain the meaning intended by the message author, and to ensure the post-coordinated expression is not mistaken from the original text recorded by the author.

In order to promote the correct use of extracted expressions, the apparent semantic context should be stored and displayed explicitly with the extracted expressions. Organisations must take extreme care to ensure that any semantic implication that a human reader may assume from such extracted clinical statements will result in a safe and correct interpretation.

Acronyms

Acronym	Description
ACHI	Australian Classification of Health Interventions
AMT	Australian Medicines Terminology
CDA	Clinical Document Architecture: an XML-based mark-up standard intended to specify the encoding, structure and semantics of clinical documents exchanged between healthcare software systems.
CTD	customised terminology description
GUI	graphical user interface
HL7	Health Level Seven
ICD	International Statistical Classification of Diseases and Related Health Problems
IHTSDO	International Health Terminology Standards Development Organisation
LDC	locally defined concept
LOINC	Logical Observation Identifiers Names and Codes
NCTIS	National Clinical Terminology and Information Service (within NEHTA)
OID	object identifier
PBS	Pharmaceutical Benefits Scheme
SNOMED CT	Systematized Nomenclature of Medicine – Clinical Terms

Glossary

Term	Meaning
Clinical information	Information about a subject of care, relevant to the health or direct treatment of that subject of care that is recorded by or on behalf of a healthcare provider [AS5021].
Clinical statement	A discrete clinical record entry.
Coding system	A system of code sets, coding standards and code maintenance procedures together with their authorization and governance as a mechanism used to allocate a code to a represent a concept, that is, the design of code in a domain [AS5021]. For the purpose of this document, a coding system refers to nomenclatures such as AMT, SNOMED CT-AU, PBS Item Codes, LOINC and so on.
Coding system indicator	An attribute value or property that uniquely identifies a coding system.
Concept	Refers to a clinical meaning or idea. A concept may have a unique numeric identifier (concept identifier). A concept is generally represented by a unique human-readable description. The concept may also be formally defined in terms of its relationship with other concepts.
Concept identifier	Refers to a unique identifier within the coding system that identifies a particular concept, and is designated as the value to use to identify concepts when communicating between systems. The registration of the OID or the underlying documentation for the coding system should be used to determine which symbols are designated for this purpose.
Customised terminology descriptions	Customised terminology description is a description. It refers to an alternative synonym not found in the vocabulary of a particular coding system, but is used within the GUI in order to meet specific usability needs within a given context of a local community of users (for example, short names). The healthcare software system has the coding system implemented as a native interface terminology but does not display the preferred terms in the GUI for some or all implemented concepts. Instead the healthcare software system displays the customised terminology descriptions (CTDs) where required. When recording and storing concepts, the healthcare software system records the concept identifier, description, version and the CTD that was displayed to the user at the time of recording the concept. CTDs have undergone a premeditated development process for the purpose of meeting specific usages and care is taken not to replace or modify the coding system release in any way. The outcome is that each CTD semantically matches the concept's unique and unambiguously defined description (that is, an AMT or SNOMED CT-AU fully specified name (FSN) equivalent), and therefore does not differ in meaning from the concept it describes. The development of CTDs must not be based on other concept descriptions that do not fully describes the concept (for example, alternative synonyms), as this may result in deviating from the true meaning of the concept. Instead the concept's FSN must be used in

Term	Meaning
	developing a new CTD for the concept. The notion of CTDs does not refer to the modification of concept descriptions or creation of LDCs at the time of recording clinical statements at runtime.
Data field	In the structure of a database, the smallest component under which data is entered through data capture or data entry. It is usually mapped to a corresponding interface element in a GUI that accepts the input in the format of alphanumeric text or binary strings. All data fields in the same database have unique names, several data fields make up a data record, several data records make up a data file, and several data files make up a database.
Description	Refers to a name assigned to a concept for the purpose of describing the concept to a human user. Multiple descriptions might be associated with a concept.
Expression	A structured combination of one or more concept identifiers used to express an instance of a clinical idea [IHTSDO2014a].
Healthcare software system	A system that deals with the collection, storage, retrieval, communication and use of health related data, and information and knowledge pertaining to subjects of care. The healthcare software system may be a standalone application or may be a combination of integrated systems.
Map	An index from one concept to another, sometimes using rules that allow translation from one representation to another indicating degree of equivalence [NEHTA2014d].
Mapping	A relationship between the code or term used to represent a health concept in one system, and the code or term that would be used to represent the same concept in another coding or terminology system [AS5021].
Organisation	In the context of this document, it refers to an organisation such as vendors, healthcare providers or health jurisdictions involved in one or more of the following activities: • Development of healthcare software systems. • Development of maps. • Development of AMT or SNOMED CT-AU custom subsets or intentional constraints for native interface terminology. • Integration, implementation or update of coding system data in healthcare software systems.
Original text	The original text is the text seen by the user at the time of recording a concept or expression (that is, post-coordinated or free text) in a human-readable format. The original text may take on various forms, depending on the medium through which original text is presented. Regardless of medium, the original text accurately coveys the meaning of the clinical statement as originally intended by the author at the time of recording and storage. In most cases, the original text would be the same as the description, that is, the preferred term (a.k.a. the *displayName* in CDA) where the user sees and selects a concept from the GUI. Alternatively, the original text would be same as the: • CTD text displayed and selected by the user;

Term	Meaning
	• text seen by the user typing a free-formed expression or a post-coordinated expression; or • a combination of a description and user-entered free text. In this case the description (display text or *displayName*) is different from the original text. The original text is mapped to the *originalText* element in a CDA document.
Post-coordinated expression	Representation of a clinical meaning using a combination of two or more concept identifiers is referred to as post-coordination [IHTSDO2014a].
Preferred term	A concept description that is deemed to be the most clinically appropriate way of expressing a concept in the healthcare software system. SNOMED CT-AU and AMT v3 preferred terms are determined by the *acceptabilityId* value of '900000000000548007' (that is, 'Preferred') defined in the Australian dialect reference set. AMT v2 preferred terms are determined by the *DescriptionType* value of '1' in the AMT v2 description release file. The term 'preferred term' may not be used in the context of coding systems other than AMT and SNOMED CT-AU, but the notion it conveys is extended beyond AMT and SNOMED-CT-AU for the purpose of this document.
Recording	In the context of this document, recording refers to the action of data entry, by which a user populates a data field with data either by typing text, selecting items from a dropdown or list, importing, copy and paste from an alternative source, and so on. Not to be confused with the storage of data in a healthcare software system.
Runtime	The period during which a computer software program is executing.
Source coding system	A terminology, coding scheme or classification used as the starting point for map production (in the context of mapping) [NEHTA2014d].
Store, storage or storing	Refers to non-volatile storage of data through the action of keeping data in a location (for example, system database) in such a manner that it can be retrieved by the healthcare software for processing at any time when required. Storing data results in the data being persisted until it gets removed.
Synonym	A term that is an acceptable alternative to the preferred term as a way of expressing a concept. Synonyms allow representations of the various ways a concept may be described. Synonyms and preferred terms are not necessarily unique. More than one concept might share the same preferred term or synonym [IHTSDO2014a].
Target coding system	A terminology, coding scheme or classification to which some or all of the concepts in another terminology, coding system or classification (the map source) are mapped [NEHTA2014d].
Translations	Refers to the encoding of maps in messages or CDA documents.

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