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CDA Rendering Specification
Clinical Documentation

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Transition of terms

Certain terms used within the context of this document have changed. The table provides a clear comparison of the historical terms used in text and their current equivalents for your reference.

Historical term	Current term
National eHealth Transition Authority (NEHTA)	The Australian Digital Health Agency (ADHA)

Table of contents

Preface

Document Purpose

This document is designed to provide eHealth software developers with a specification which addresses the rendering of Clinical Document Architecture (CDA) documents within their solutions.

Intended audience

This document should be read and understood by:

- Software developers
- Solution integration specialists
- Clinicians who are interested in the presentation of the CDA Header (Note: this specification provides no specific conformance requirements regarding how the clinical content is presented within the CDA Body)
- Interested parties with a working understanding of CDA.

Scope

This document:

- Introduces CDA Rendering, this specification and its anticipated benefits
- Enumerates rendering requirements for constructing and presenting CDA documents
- Specifies the presentation of the CDA Header
- Specifies the narrative block elements, attributes and style codes that can be used to construct the narrative blocks of CDA documents
- Provides conformance requirements for version management and a mechanism to assert conformance to a version of this specification in CDA documents.

Keywords

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [IETF2119].

Namespaces

This specification contains examples of XML which demonstrate how elements of CDA documents should be constructed. By default (i.e. elements without a namespace specified) these elements use the HL7 CDA Release 2 [HL7CDAR2] schema e.g. <ClinicalDocument>. The only other schema/namespace in use in this specification is the namespace for CDA extensions defined by NEHTA and is specified by the ext prefix e.g. <ext:completionCode>.

Future

This document may be superseded by other documents. Until then, this document describes the obligations that must be followed by vendors and eHealth sites.

Definitions, Acronyms and Abbreviations

For lists of definitions, acronyms and abbreviations, see the Definitions section at the end of the document.

References

For lists of referenced documents, see the References section at the end of the document.

1 Introduction

"Rendering" may be considered to be the transformation of machine-readable Clinical Document Architecture (CDA) documents containing structured health-related information into human-readable representations, and the display of these representations via a variety of practical devices employable by clinical staff.

To improve the interoperability of producers and consumers of CDA documents from a Rendering perspective, there is an obligation for all participants to agree to a minimal set of rules to specify the rendering of these documents.

To ensure market competition and flexibility, it is equally important to ensure that these rules do not stifle participants or prevent them from adding distinctive value-added capabilities to their solutions.

This specification proceeds from each of these principles and provides a single set of rules to govern rendering of CDA documents in the Australian eHealth context. To this end, this specification describes a method and a series of conformance requirements which act as a contract between compliant Authoring and Rendering Systems.

It should be noted that this specification contains no conformance requirements for the content of the CDA Body. Neither does it specify requirements for Authoring Systems to use specific styles or visual elements (e.g. Authoring Systems have the option to use a table or a list to display a list of medications). Specific CDA Implementation Guides can be expected to make their own rules concerning the content of the narrative sections.

1.1 Benefits

In addition to improving interoperability between Authoring and Rendering Systems, the following benefits are anticipated.

1.1.1 Consistent display of common data items

This specification defines standard formats for the display of common data items (e.g. patient identifiers, sex, etc.) when rendering CDA documents. This ensures a consistent display of these items.

1.1.2 Separation of CDA document and rendering system

Rendering Systems compliant with this specification may be implemented in a wide variety of instances, based on various factors, including:

- Underlying platform (e.g. operating system)
- Interaction/Usability (e.g. touch or pointing devices etc.)
- Display paradigms (e.g. pagination, GUI interfaces, web page etc.)
- Presentation Hardware (paper, smartphone, tablets, etc.)

This specification allows Rendering Systems based on the above factors to be developed without requiring any changes in the underlying CDA document.

1.1.3 Avoiding executable code issues

CDA Rendering Systems are commonly based on stylesheets which, through execution, transform the CDA document into a format more suited for presentation (e.g. transforming the CDA document into an HTML document for display in a typical Web Browser application). Given that these stylesheets amount to executable code, it is inappropriate to expect participants involved in clinical electronic document exchanges to accept these on-the-fly. The risk of viral infection or other security-related issues obliges the solution to provide protective measures while still allowing interoperability. Additionally, different software platforms and architectures cannot share a common set of executable code.

By ensuring that both Authors and Recipients employ compliant Authoring and Rendering Systems based on this specification, a level of trust may be established for specific compliant systems with secure and trusted distribution mechanisms. Executing untrusted or unsuitable external code may thus be avoided.

1.1.4 Encouraging vendor value-add

Solutions based on this specification allow participating software vendors opportunities to identify and offer distinctive value propositions in their systems, typically in reference to the capabilities enabled by their intellectual property (IP).

1.1.5 Supporting varying requirements

Vendors and electronic document exchange participants are likely to have different requirements of their solutions. Some may simply need a working, off-the-shelf implementation to allow participation, while others may wish to extensively customise the display of electronic documents to leverage their IP-based capabilities and promote their brand.

2 General Conformance Requirements

Authors using compliant Authoring Systems can, in general, exert a high level of control on the appearance of CDA documents. Specifically, the presentation of the clinical content contained in the CDA Body is limited only by the narrative block elements, attributes and style codes available in compliant Authoring Systems.

Authors do not have the same control over the presentation of the CDA Header. Rather, compliant Rendering Systems present the CDA Header in a standard fashion so that all implementations are similar.

The Author's control of the document rendering is also constrained; in particular, the document may or may not be laid out using a page metaphor. Similarly, whitespace, page width, and breaks are not fully controlled.

Rendering Systems have the ability to control how layout is best used on the target platform, whether paper, iPhone screen, large imaging monitors, or a web-based clinical portal.

This section of the specification defines general conformance requirements for Authoring and Rendering Systems. Specifically, requirements for behaviour and responsibilities of these systems independent of the contents of the CDA document Header and Body. Additionally, this section provides a consistent reference for the presentation of common data items.

2.1 Conformance requirements

2.1.1 Authoring systems

CDA-RS 1 Authoring Systems SHALL construct CDA documents according to the CDA Implementation Guide being followed as well as the conformance requirements for Authoring Systems contained in this specification.

CDA-RS 2 If a CDA Implementation Guide requires a minimum version of this specification, Authoring Systems SHALL produce documents that render correctly to the Author using a Rendering System compliant with the version of this specification required in the CDA Implementation Guide.

CDA-RS 3 To ensure Author accountability:

a) Authoring Systems SHALL implement controls and maintain records in order to provide evidence that the Author of the document is responsible for its content.

b) Authoring Systems SHOULD display a rendered view of the document using a conformant Rendering system.

CDA-RS 4 When using XML ID attributes in elements of the CDA document, Authoring Systems SHALL ensure that these XML ID attribute values are unique.

2.1.2 Rendering systems

CDA-RS 5 Rendering Systems SHALL display CDA documents according to the conformance requirements for Rendering Systems contained in this specification.

CDA-RS 6 A CDA Implementation Guide can mandate that a minimum version of this specification is required. If Rendering Systems need to display these documents, they SHOULD ensure that the version of this specification to which they comply is greater than or equal to the minimum version required by the CDA Implementation Guide.

CDA-RS 7 When rendering a nested section of the CDA Body, Rendering Systems SHOULD clearly indicate the relationship between the sections.

CDA-RS 8 Rendering Systems SHALL support all the narrative block elements, attributes, style codes and rendering features defined in this specification.

CDA-RS 9 Rendering Systems MAY provide a document rendering view title (not the CDA document tile) as part of the rendering of the CDA document (e.g. the title in the header of an HTML document, or a window title in Microsoft Windows or Apple OS X).

CDA-RS 10 Rendering Systems SHALL clearly indicate the beginning and end of the CDA document when displaying it.

CDA-RS 11 Rendering Systems SHOULD use the CDA document title (see more below) as the document rendering view title.

CDA-RS 12 Rendering Systems SHOULD ensure they have a display capable of displaying 24 bit colour and that they are capable of inline rendering of images up to 1 megabyte in size.

2.2 Data formatting conformance requirements

The following conformance requirements apply to presentation of specific types of data items. These apply to both the CDA Header and Body as follows:

- CDA Header

  Data items to be rendered from the header are always structured according to the requirements of the CDA Implementation Guide being used by the Authoring System. CDA Rendering Systems are thus able to parse these values and interpret them accordingly (e.g. the <telecom> element indicates an Electronic Communication Detail data item). Once interpreted, it is then up to the Rendering System to present this data to a user in a specific format. It is therefore possible to do so in many different ways (e.g. a patient name could be presented as is, or special format could be applied by the Rendering System to ensure improved readability, or the system could display a patient family name with all characters in uppercase). The conformance requirements below ensure that compliant Rendering Systems display specific data items from the header in a consistent manner.

- CDA Body

  Data to be rendered from the Body of a CDA document is found in the narrative block of each section of the Body. The data in the narrative block is based on an HL7-defined markup language. Elements of this markup language allow for presentation semantics but places no structure around the data itself. Rendering Systems display these data items as they appear in the narrative block elements.

When Authoring Systems generate content to populate the narrative block automatically, different systems will potentially format the same type of data item in various ways (e.g. the date 1st February 2012 could be formatted as both 01-02-2012 or 02-01-2012 or 1-Feb- 2012).

The conformance requirements below ensure that compliant Authoring Systems format data items in a consistent manner when these systems automatically generate narrative block content. Compliant Rendering Systems will consequently always render them in a consistent manner.

It should be noted that these formatting conformance requirements do not apply to narrative block content that was produced by a human being e.g. a typed Clinical Synopsis in a Discharge Summary.

2.2.1 Healthcare Identifier (HI) service identifiers

CDA-RS 13 HI Service identifiers (e.g. IHI, HPI-O and HPI-I) values SHALL be formatted as four groups of four digits with a space separating each four-digit group (e.g. 8300 0000 0000 0000).

2.2.2 Date and time

CDA-RS 14 Time values SHALL be formatted with a one-digit or two-digit hour and two-digit minute separated by a colon, using a 24 hour clock e.g. 13:00 for 1:00pm or 1:00 for 1:00am).

CDA-RS 15 Time zone values SHALL be formatted as follows:

(a) If a time zone is required, it SHALL be formatted using a plus (+) or minute (-) sign immediately after the time, followed by the number of hours and minutes ahead or behind UTC time respectively.

(b) The hours and the minutes for the time zone SHALL both be two-digit values with no other characters separating the number of hours and minutes (e.g. 13:00+1000 or 1:00-0600).

CDA-RS 16 Date values containing day, month and year SHALL be formatted as follows:

(a) Date values containing day, month and year SHALL be formatted with a one-digit or two-digit day, three- character month, and four-digit year.

(b) The three-character month SHALL be the first three characters of the month with the first letter capitalised.

(c) The day, month and year SHALL be separated with a separator which SHALL be either a single space or a single dash (e.g. “10 Jul 2010” or “1-Jan-2011”).

(d) Separators SHALL NOT be used interchangeably within a single date i.e. 1-Jan 2012 is NOT ALLOWED due to a space and a dash being used as a separator character.

CDA-RS 17 Date and time values made up of a date value and time value SHALL be formatted as follows:

(a) Date and time values made up of a date value and time value SHALL be formatted with the date first followed by the time with a space between the two.

(b) The individual date and individual time values SHALL be formatted as described in this document (e.g. "10 Jul 2010 1:00" or "1 Jul 2010 1:00+1000").

2.2.3 Person name

CDA-RS 18 Person name values SHALL be formatted in the following order: Name Title(s), Given Name(s), Family Name(s), Name Suffix(es) (e.g. “Prof Sir John Gregory Citizen III MP”).

2.2.4 Patient family name

CDA-RS 19 Patient family name values SHALL be formatted in uppercase letters as part of their name (e.g. “Mr Fred CITIZEN”).

2.2.5 Sex

CDA-RS 20 Sex values SHALL be formatted in full with no abbreviations (e.g. “Male”, “Female”, “Intersex or Indeterminate”, “Not stated / Inadequately described”).

2.2.6 National and international phone number

CDA-RS 21 National and International phone number values SHOULD be formatted according to the ITU-T E.123 standard [ITU-T2001] e.g. (07) 123 4567 and +44 208 123 4567.

2.2.7 Email address

CDA-RS 22 Email address values SHALL be formatted according to the ITU- T E.123 standard [ITU-T2001] e.g. fred@example.com.

3 CDA Header

3.1 Introduction

This section provides conformance requirements related to the presentation of fields contained in the CDA Header. The CDA Header is a fully-structured part of the CDA document and Authoring Systems construct it according to the CDA Implementation Guides for the specific document being created (e.g.

Discharge Summary).

The structure of the CDA Header contains no information specifying how the information should be rendered. This section of the specification provides conformance requirements for Rendering Systems which specify how the information in the CDA Header shall be presented.

The presentation specified is informed by the need to ensure that the header is displayed consistently and to give Authors of CDA documents assurance that specific fields will be presented by compliant Rendering Systems.

The conformance requirements address presentation of the CDA Header by referring to two groups of information from the CDA Header: The Banner and the Details. These are defined as follows:

The Banner

The Banner is a summary that is always required to appear when the document is displayed to a human user. It consists of the following items of information:

- The CDA document title
- The patient's name
- The patient's sex
- The patient's date of birth
- The patient's Individual Healthcare Identifier (IHI)
- If provided, the authoring facility's local identifier for the patient (e.g. MRN, URN).

The specific fields of the Banner are listed in Table 1 in section 3.3.1.

The Details

The Details are additional information about the CDA document from the Header. The Details consist of the following groups of information:

- CDA Document Metadata
- CDA Document Author Details
- Patient Details
- Participant and Recipient Details
- Healthcare Facility Details
- Encounter Details

Specific fields of the Details are listed in Table 2 in section 3.3.2.

3.2 Conformance requirements

3.2.1 Authoring systems

CDA-RS 23 Authoring Systems SHOULD include a CDA document title in the <title> header element. This ensures that, when the document is rendered, an appropriate Author or episode-specific title is displayed to users.

CDA-RS 24 Authoring Systems SHALL be aware that when a <title> header element is not provided, a CDA document title will be derived by compliant Rendering Systems based on other header elements (see below for CDA document title).

CDA-RS 25 Authoring Systems MAY include a GIF, JPEG or PNG organisational logo (or branding image) in the header Details display.

CDA-RS 26 If an organisational logo is used:

(a) Authoring Systems SHALL include the organisational logo image as an attachment in accordance with the CDA Package specification [CDAP2011].

(b) Authoring Systems SHALL provide an <observationMedia> entry in the body of the CDA document to specify the image type and file name of the organisational logo in the CDA package.

(c) Authoring Systems SHALL ensure that the organisational logo's associated <observationMedia> entry has an XML ID attribute with an assigned value of "LOGO".

(d) Authoring Systems SHALL NOT include an organisational logo larger than 400 pixels in width and 100 pixels in height.

3.2.2 Rendering systems

The following conformance requirements describe which fields are displayed, and how they are presented.

CDA-RS 27 Rendering Systems SHALL either display the Banner as part of the document display (e.g. when viewed as a single document in a web browser) or in the parts of the application that surround the document (e.g. a separate graphics panel in a graphical user interface [GUI] application).

CDA-RS 28 When displaying the Banner, Rendering Systems SHALL display all the fields of the Banner present in the CDA document.

CDA-RS 29 When displaying the Details:

(a) Rendering Systems MAY omit the display of local identifiers for the patient (e.g. MRNs) and Healthcare Provider Identifiers (e.g. HPI-I and HPI-O).

(b) Rendering Systems SHALL display all other fields of the Details present in the CDA document.

CDA-RS 30 CDA document type:

(a) The root attribute value of <templateId> header elements SHALL be used to determine the CDA Implementation Guide upon which the document is based and thus the corresponding document type (e.g. "Discharge Summary").

(b) Rendering Systems SHALL display the CDA document type as part of the Details.

CDA-RS 31 CDA document title:

(a) Rendering Systems SHALL display the CDA document type as part of the Details.

(b) The CDA document title SHALL be determined as follows:

- If the CDA document's <title> header element has a value, then this value is the CDA document title.
- If a <title> header element is not present, the CDA document type (see above) is the CDA document title (e.g. "Discharge Summary").
- If a <title> header element is not provided, and the <templateId> header element cannot be resolved, the value of the displayName attribute of the <code> header element is the CDA document title.

CDA-RS 32 If the CDA document being rendered contains a <relatedDocument> header element which indicates that the document replaces a previous one, Rendering Systems SHALL clearly indicate that this document replaces a previous one when displaying the Details.

CDA-RS 33 If the CDA document being rendered contains an <ext:completionCode> header element which indicates that the document has been withdrawn, Rendering Systems SHALL clearly indicate that this document has been withdrawn when displaying the Details.

CDA-RS 34 When rendering electronic communication details contained in <telecom> header elements, Rendering Systems SHALL ensure that, when present in the CDA document, the medium (part of the value attribute e.g. mobile phone, email) and the usage (contained in the use attribute e.g. Business, Personal, or Both) are clearly displayed along with the associated address.

CDA-RS 35 The Banner has fixed content based on the content of the CDA document, though Rendering Systems MAY choose colours and exact sizes appropriate for their own context.

CDA-RS 36 When fields of the Banner in the CDA document have multiplicity (e.g. multiple names or MRNs) Rendering Systems SHALL display the first instance of each when displaying the Banner.

CDA-RS 37 When fields of the Details in the CDA document have multiplicity (e.g. multiple names or communication details for an individual) Rendering Systems SHALL display all of these instances when displaying the Details.

CDA-RS 38 Unlike the Banner, the Details do not need to be visible at all times; Rendering Systems MAY elect to hide them after they have been displayed, as long as users have a clearly marked and easy to use option to hide and reveal the Details.

CDA-RS 39 Rendering Systems SHALL ensure that the fields of the Details are displayed by default until the user chooses otherwise.

CDA-RS 40 If the Rendering System supports printing:

(a) The Banner SHALL be printed at the top of each resulting page.

(b) The Details SHALL be printed.

(c) When printing a document, every page SHOULD include a "Page N of T" marker, to allow document integrity to be easily assessed.

CDA-RS 41 Rendering Systems MAY display other information from the CDA Header which is not present in the Banner or the Details.

3.3 The Banner and the Details fields

This section provides the complete list of fields which make up the Banner and the Details along with XPath paths to the associated elements in CDA documents.

3.3.1 Table 1: The Banner

Field	XPath
CDA Document Title	/ClinicalDocument/title
Patient Name	/ClinicalDocument/recordTarget/patientRole/patient/name
Patient Sex	/ClinicalDocument/recordTarget/patientRole/patient/administrativeGenderCode
Patient Date of Birth	/ClinicalDocument/recordTarget/patientRole/patient/birthTime
Patient IHI	/ClinicalDocument/recordTarget/patientRole/patient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='IHI']
Local Patient Identifier	/ClinicalDocument/recordTarget/patientRole/patient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='IHI']

3.3.2 Table 2: The Details

Category	Field	XPath
CDA Document Metadata	Document ID	/ClinicalDocument/id
	CDA Document Type	/ClinicalDocument/templateId
	Document Set ID	/ClinicalDocument/setId
	Document Version	/ClinicalDocument/versionNumber
	Completion Code	/ClinicalDocument/ext:completionCode
	Document Title	/ClinicalDocument/title
	Document Creation Time	/ClinicalDocument/effectiveTime
	Datetime attested	/ClinicalDocument/legalAuthenticator/time
	Document Replacement Indicator	/ClinicalDocument/relatedDocument[@typeCode='RPLC']
	Document ID of document being replaced	/ClinicalDocument/relatedDocument[@typeCode='RPLC']/parentDocument/id

Category	Field	XPath
CDA Document Author Details	HPI-I	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-I']]
	Other Identifiers	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='HPI-I']]
	Name	/ClinicalDocument/author/assignedAuthor/assignedPerson/name
	Role	/ClinicalDocument/author/assignedAuthor/code
	Address	/ClinicalDocument/author/assignedAuthor/addr
	Communication Details	/ClinicalDocument/author/assignedAuthor/telecom
	Organisation Name	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEmployment/ext:employerOrganization/asOrganizationPartOf/wholeOrganization/name
	Organisation HPI-O	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEmployment/ext:employerOrganization/asOrganizationPartOf/wholeOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-O']
	Department Name	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEmployment/ext:employerOrganization/name
	Department HPI-O	/ClinicalDocument/author/assignedAuthor/assignedPerson/ext:asEmployment/ext:employerOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-O']
Encounter Details	Encounter Period	/ClinicalDocument/componentOf/encompassingEncounter/effectiveTime
	Separation Mode	/ClinicalDocument/componentOf/encompassingEncounter/dischargeDispositionCode
Facility Details	HPI-O	/ClinicalDocument/componentOf/encompassingEncounter/location/healthCareFacility/serviceProviderOrganization/asOrganizationPartOf/wholeOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-O']
	Other Identifiers	/ClinicalDocument/componentOf/encompassingEncounter/location/healthCareFacility/serviceProviderOrganization/asOrganizationPartOf/wholeOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='HPI-O']
	Name	/ClinicalDocument/componentOf/encompassingEncounter/location/healthCareFacility/serviceProviderOrganization/asOrganizationPartOf/wholeOrganization/name
	Address	/ClinicalDocument/componentOf/encompassingEncounter/location/healthCareFacility/serviceProviderOrganization/asOrganizationPartOf/wholeOrganization/addr

Category	Field	XPath
	Communication Details	/ClinicalDocument/componentOf/encompassingEncounter/location/healthCareFacility/serviceProviderOrganization/asOrganizationPartOf/wholeOrganization/telecom
Organisational Logo	Organisational Logo	/ClinicalDocument/component/structuredBody/component//section/entry/observationMedia[@ID='LOGO']
Patient Details	IHI	/ClinicalDocument/recordTarget/patientRole/patient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='IHI']
	Other Identifiers	/ClinicalDocument/recordTarget/patientRole/patient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='IHI']
	Name	/ClinicalDocument/recordTarget/patientRole/patient/name
	Sex	/ClinicalDocument/recordTarget/patientRole/patient/administrativeGenderCode
	Date of Birth	/ClinicalDocument/recordTarget/patientRole/patient/birthTime
	Deceased Indicator	/ClinicalDocument/recordTarget/patientRole/patient/ext:decasedInd
	Deceased Time	/ClinicalDocument/recordTarget/patientRole/patient/ext:decasedTime
	Address	/ClinicalDocument/recordTarget/patientRole/addr
	Communication Details	/ClinicalDocument/recordTarget/patientRole/telecom
Recipient Details	HPI-I	/ClinicalDocument/informationRecipient/intendedRecipient/informationRecipient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-I']
	Other Identifiers	/ClinicalDocument/informationRecipient/intendedRecipient/informationRecipient/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='HPI-I']
	Name	/ClinicalDocument/informationRecipient/intendedRecipient/informationRecipient/name
	Occupation	/ClinicalDocument/informationRecipient/intendedRecipient/informationRecipient/ext:asEmployment/ext:jobCode
	Qualifications	/ClinicalDocument/informationRecipient/intendedRecipient/informationRecipient/ext:asQualifications/ext:code/originalText
	Address	/ClinicalDocument/informationRecipient/intendedRecipient/addr
	Communication Details	/ClinicalDocument/informationRecipient/intendedRecipient/telecom
	Organisation Name	/ClinicalDocument/informationRecipient/intendedRecipient/receivedOrganization/name

Category	Field	XPath
	Organisation HPI-O	/ClinicalDocument/informationRecipient/intendedRecipient/receivedOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-O']
Participant Details	HPI-I	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-I']
	Other Identifiers	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName!='HPI-I']
	Name	/ClinicalDocument/participant/associatedEntity/associatedPerson/name
	Occupation	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asEmployment/ext:jobCode
	Qualifications	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asQualifications/ext:code/originalText
	Address	/ClinicalDocument/participant/associatedEntity/addr
	Communication Details	/ClinicalDocument/participant/associatedEntity/telecom
	Organisation Name	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asEmployment/ext:employerOrganization/asOrganizationPartOf/wholeOrganization/name
	Organisation HPI-O	/ClinicalDocument/participant/associatedEntity/associatedPerson/ext:asEmployment/ext:employerOrganization/asOrganizationPartOf/wholeOrganization/ext:asEntityIdentifier[@classCode='IDENT']/ext:id[@assigningAuthorityName='HPI-O']

4 CDA Body

4.1 Introduction

This section provides conformance requirements for Authoring and Rendering Systems on how to structure and present the Body of CDA documents in accordance with this specification. From a rendering perspective, the narrative blocks contained in the CDA document body represents the content to be rendered.

Authors employ compliant Authoring Systems to encode clinical information in the narrative blocks, with some control over the rendered appearance of the document following receipt and processing by Rendering Systems. This control is based on their choice of which narrative elements, attributes and style codes they choose to use to represent the content.

This section of this specification provides rules for compliant Authoring and Rendering Systems to cooperate by specifying which narrative elements, attributes and style codes from the CDA Schema are supported and how they are supported. This ensures that clinical information is presented faithfully.

4.2 Conformance requirements

4.2.1 Authoring systems

CDA-RS 42 Authoring Systems SHALL include a section title in each section of the Structured Body.

CDA-RS 43 Authoring Systems SHALL NOT populate the narrative block with free text that is not contained in an allowed narrative block element e.g. <paragraph> or <content>.

CDA-RS 44 Authoring Systems SHOULD use separate <paragraph> narrative block elements to separate paragraphs of text.

CDA-RS 45 Authoring Systems SHOULD represent free text in <paragraph> narrative block elements.

CDA-RS 46 Authoring Systems SHOULD represent single ordered or unordered (where the item type or grouping is implicit or not relevant) lists of data items in <list> narrative block elements.

CDA-RS 47 <linkHtml>

(a) Authoring Systems MAY use the <linkHtml> narrative block element to provide links to other narrative elements or to specific sections.

(b) When using <linkHtml>, Authoring Systems SHALL ensure that the elements being linked to contain the correct XML ID attribute value.

CDA-RS 48 Authoring Systems SHOULD represent a collection of data items with each consisting of multiple fields in a <table> narrative block element.

CDA-RS 49 Time zones in narrative blocks:

(a) Authoring Systems SHOULD ensure that all date and/or time values in the narrative blocks of the CDA document body are in the same time zone as the document itself.

(b) If the date and/or time values are in a different time zone, the time zone SHALL be specified clearly so that the reader understands which time zone a specific date and/or time is in.

CDA-RS 50 Authoring Systems MAY use the following narrative block elements as specified in the CDA R2 specification [HL7CDAR2]:

- <content>
- <linkHtml>
- <sub> and <sup>
-
- <footnote> and <footnoteRef>
- <renderMultiMedia>
- <paragraph>
- <list> and <item>
- <table>, <thead>, <tbody>, <tr>, <td> and <th>

CDA-RS 51 Authoring Systems using the <nonXMLBody> element SHALL only reference an attachment in the <nonXMLBody> element.

CDA-RS 52 Tables & Lists

(a) Authoring Systems MAY use <caption> narrative block elements in <table> narrative block elements.

(b) Authoring Systems SHOULD provide a single <tr> narrative block element as a column heading row when using the <table> narrative block elements.

(c) Authoring Systems SHALL ensure that the column heading row is contained in the <thead> narrative block element of <table> narrative block elements.

(d) Authoring Systems SHALL provide individual column headings in <th> narrative block elements.

(e) Authoring Systems SHALL ensure that non-heading tableThere i rows are contained in the <tbody> narrative block element of <table> narrative block elements.

(f) Authoring Systems MAY provide colspan and rowspan attributes in <th> and <td> narrative block elements.

(g) Authoring Systems SHALL ensure the number of columns in each table row is kept constant.

(h) Authoring Systems MAY nest <list> narrative block elements inside <td> narrative block elements.

(i) Authoring Systems MAY nest <paragraph> narrative block elements inside <td> narrative block elements.

(j) Authoring Systems MAY nest <content> narrative block elements inside <td> narrative block elements.

(k) Authoring Systems SHOULD ensure a <caption> narrative block element is provided in all <table> narrative block elements.

(l) Authoring Systems MAY use the listType attribute of the <list> narrative block element to specify an ordered list.

(m) Authoring Systems SHALL provide at least one <item> narrative block element inside the <list> narrative block element.

(n) Authoring Systems SHALL NOT nest <paragraph> or <table> narrative block elements inside <item> narrative block elements.

(o) Authoring Systems MAY nest <list> narrative block elements in <item> narrative block elements.

(p) Authoring Systems SHALL NOT exceed three levels of nested <list> narrative block elements.

CDA-RS 53 Attachments

(a) Authoring Systems MAY use the <renderMultimedia> narrative block element to reference an observationMedia entry in the CDA document to include GIF, JPEG and PNG images in narrative blocks.

(b) Authoring Systems MAY use the <renderMultimedia> narrative block element to reference an observationMedia entry in the CDA document to include Hypertext Markup Language (HTML) document attachments in narrative blocks.

(c) Authoring Systems MAY use the <renderMultimedia> narrative block element to reference an observationMedia entry in the CDA document to include Adobe Portable Document Format (PDF) document attachments in narrative blocks.

(d) Authoring Systems MAY use the <renderMultimedia> narrative block element to reference an observationMedia entry in the CDA document to include Rich Text Format (RTF) document attachments in narrative blocks.

(e) Authoring Systems MAY use the <renderMultimedia> narrative block element to reference an observationMedia entry in the CDA document to include Plain Text (TXT) document attachments in narrative blocks.

(f) Authoring Systems SHALL NOT include references to attachments which contain executable code (e.g. JavaScript code in HTML documents).

(g) Authoring Systems SHALL NOT include references to attachments which require resources to be downloaded from external network locations (e.g. HTML document attachments which contain images to be loaded from external web servers).

(h) Authoring Systems SHALL include a <caption> narrative block element in all <renderMultimedia> narrative block elements when referencing HTML, PDF, RTF or Plain Text documents.

(i) Authoring Systems SHALL ensure that all attachments referenced in <renderMultimedia> narrative block elements or used for a branding logo, are not inlined in their associated observationMedia entries.

(j) The referenced attachments SHALL be included in the CDA Package in accordance with the CDA Package specification [CDAP2011].

CDA-RS 54 Style codes

(a) Authoring Systems MAY use the styleCode attribute in the <content>, <table>, <list>, <paragraph>, <item>, <th> and <td> narrative block elements.

(b) Authoring Systems SHALL NOT use the styleCode attribute in narrative block elements not explicitly allowed in this specification.

(c) Authoring Systems SHALL support multiple applicable values (separated by a single space) in a single styleCode attribute e.g. ”Bold Italics Underline”.

CDA-RS 55 <content>, <item>, <th>, <td>, and <paragraph> style codes

(a) Authoring Systems MAY use the “Bold” styleCode attribute value if bold text is required.

(b) Authoring Systems MAY use the “Underline” styleCode attribute value if underlined text is required.

(c) Authoring Systems MAY use the “Italics” styleCode attribute value if text in italics is required.

(d) Authoring Systems MAY use the “Emphasis” styleCode attribute value if text with emphasis is required.

(e) Authoring Systems MAY use the custom “xFixed” styleCode attribute value if a fixed-width/monospace font is required.

(f) Authoring Systems MAY use the custom “xPre” styleCode attribute value if text containing whitespace and carriage returns (which may not be ignored) is required.

(g) Authoring Systems MAY use the custom “xBgColourHHHHHH” styleCode attribute value if a specific background colour specified by the HHHHHH hex code is required e.g. “xBgColourFF0000” for a red background.

(h) Authoring Systems MAY use the custom “xFgColourHHHHHH” styleCode attribute value if a specific foreground colour specified by the HHHHHH hex code is required e.g. “xFgColour00FF00” for a green foreground.

(i) Authoring Systems MAY use the custom “xFontSizeEmZ” styleCode attribute value if a specific font size in ems specified by Z is required e.g. “xFontSizeEm1” for a font size of one em.

(j) Authoring Systems MAY use the custom “xFontSizePxZ” styleCode attribute value if a specific font size in pixels specified by Z is required e.g. “xFontSizePx10” for a font size of ten pixels.

(k) Authoring Systems MAY use the custom "xColWidthPxZ" styleCode attribute value if a specific column width specified by Z is required in <td> or <th> elements e.g. "xColWidthPx10" for a column width of ten pixels.

CDA-RS 56 <th> and <td> style codes

(a) Authoring Systems MAY use the “Lrule” styleCode attribute value if rendering a cell with a left-sided rule is required.

(b) Authoring Systems MAY use the “Rrule” styleCode attribute value if rendering a cell with a right-sided rule is required.

(c) Authoring Systems MAY use the “Toprule” styleCode attribute value if rendering a cell with a top rule is required.

(d) Authoring Systems MAY use the “Botrule” styleCode attribute value if rendering a cell with a bottom rule is required.

CDA-RS 57 <list> style codes

(a) Authoring Systems MAY use the “Disc” styleCode attribute value in unordered list narrative block elements if solid circle bullets are required.

(b) Authoring Systems MAY use the “Circle” styleCode attribute value in unordered list elements if empty circle bullets are required.

(c) Authoring Systems MAY use the “Square” styleCode attribute value in unordered list elements if square shaped bullets are required.

(d) Authoring Systems MAY use the “LittleRoman” styleCode attribute value in ordered <list>narrative block elements if little Roman numerals are required (i.e. i, ii, iii).

(e) Authoring Systems MAY use the “BigRoman” styleCode attribute value in ordered <list>narrative block elements if big Roman numerals are required (i.e. I, II, III).

(f) Authoring Systems MAY use the “LittleAlpha” styleCode attribute value in ordered <list>narrative block elements if little alphabetic letters are required (i.e. a, b, c).

(g) Authoring Systems MAY use the “BigAlpha” styleCode attribute value in ordered <list> narrative block elements if big alphabetic letters are required (i.e. A, B, C).

4.2.2 Rendering systems

CDA-RS 58 Rendering Systems SHALL display the section title if present in sections of the CDA Body.

CDA-RS 59 Rendering Systems SHALL support all the narrative block elements, attributes, and style codes available to Authoring Systems above irrespective of them being mandatory or optional for Authoring Systems.

CDA-RS 60 Rendering Systems SHALL ensure they are able to present HTML, PDF, RTF and Plain Text document attachments. Such attachments are not displayed in-line as part of the narrative, but become visible when the user chooses the appropriate interface option to prompt their display (e.g. an HTML link in a web browser to be selected).

CDA-RS 61 Large images:

(a) Rendering Systems SHALL clearly mark all images that are too large (to process or display) as unavailable on the system.

(b) Rendering Systems SHALL allow these images to be exported for display through some other mechanism.

(c) Rendering Systems SHALL document this mechanism.

CDA-RS 62 Rendering Systems MAY support additional attachment types not required in this specification.

CDA-RS 63 Rendering Systems MAY render the <nonXMLBody> element.

5 Version Management

Compliant Authoring and Rendering System solutions make use of a version management system. This system allows Authoring and Rendering Systems and their users to confidently and concisely identify a particular version of this specification.

The CDA Rendering Specification possesses an Object Identifier (OID) root value of:

- 1.2.36.1.2001.1001.100.149

Versions of this specification can be asserted by providing a <templateId> header element with the above root value in the Header of a CDA document. The version of the CDA Rendering Specification can be provided in the extension attribute value of this <templateId> header element.

The following XML fragment demonstrates the <templateId> header element for version 1.0 of the CDA Rendering Specification:

<templateId root=”1.2.36.1.2001.1001.100.149” extension=”1.0”/>

CDA Implementation Guides may require a minimum version of the CDA Rendering Specification version by referencing the above OID and a specific version.

5.1 Conformance requirements

5.1.1 Authoring systems

CDA-RS 64 Authoring Systems SHALL populate a <templateId> header element with the oldest version of this specification that is required to render the document correctly.

CDA-RS 65 Authors SHALL NOT require an older version of the CDA Rendering Specification specified as the minimum in the CDA Implementation Guide they are currently following.

CDA-RS 66 Authors MAY require a more recent version of the CDA Rendering Specification specified as the minimum in the CDA Implementation Guide they are currently following.

CDA-RS 67 Authoring Systems SHALL produce documents that render correctly to the Author when processed by a Rendering System that is compliant with the version of this specification asserted in the CDA document.

5.1.2 Rendering systems

CDA-RS 68 Rendering Systems SHALL support at least the version of this specification required in a specific CDA Implementation Guide for rendering of that specific type of CDA document.

CDA-RS 69 When displaying a CDA document:

(a) Rendering Systems SHALL check the CDA Rendering Specification version in the <templateId> header element of the CDA document.

(b) Rendering Systems SHALL display a clear warning if they are not compliant with the Rendering Specification version asserted in the CDA document being displayed.

(c) Rendering Systems SHALL require users to acknowledge the warning before viewing the content.

Definitions

Shortened Terms

This table lists abbreviations and acronyms in alphabetical order.

Term	Description
CDA	Clinical Document Architecture
HL7	Health Level 7
IP	Intellectual Property
JPEG (JPG)	Joint Photographic Experts Group
OID	Object Identifier
PDF	Portable Document Format
PNG	Portable Network Graphics
XML	Extensible Markup Language
XSLT	Extensible Stylesheet Language Transformations

Glossary

This table lists specialised terminology in alphabetical order.

Term	Description
Author	Originator of a clinical message via an Authoring System, which conforms to NEHTA specifications.
Authoring System	Data capturing and processing resource used by the Author to encode a clinical message in conformance with NEHTA specifications.
Clinical Document Architecture	An HL7 standard for XML-based encoding, structuring and semantic interoperability for electronic clinical documents.
Extensible Markup Language	A machine-readable rule-set for encoding electronic documents, capable of being customised for specific usages.
Extensible Stylesheet Language Transformations	A machine-readable rule-set for the conversion of XML input into various forms, capable of being customised for specific usages.

Term	Description
Health Level 7	A non-profit healthcare informatics interoperability organisation.
Joint Photographic Experts Group (image compression standard)	A ubiquitous, lossy compression schema for digital photography.
Object Identifier	In computing, a naming identifier based on a node/branch model.
Portable Document Format	An open-standard electronic document exchange format incorporating text, fonts and layout, and graphics.
Portable Network Graphics	A lossless compression schema for digital photography.
Rendering System	Data processing resource used by a receiver to decode and present clinical messages which conform with NEHTA specifications to users.
Stylesheet	A set of instructions, usually contained in a single file, used to transform CDA XML documents into another form for the purpose of rendering. The original CDA document is not changed; rather, a new document or file is created by applying the Stylesheet to the CDA document using appropriate Stylesheet processing software. The document produced through this process is based on the content in the CDA document as well as styling provided by the Stylesheet. Some styling may be specified in the CDA document and must be taken into account by the Stylesheet when it is applied (e.g. bold or underlined text in the narrative block). The resulting output document may be rendered and viewed by humans using appropriate hardware and/or software.

References

The following references have been cited in this document.

Reference Documents			
[REF]	Document Name	Publisher	Link
[CDAP2011]	NEHTA CDA Package v1.0	NEHTA 2011	https://implementer.digitalhealth.gov.au
[HL7CDAR2]	Health Level Seven, Inc., January 2010, HL7 Clinical Document Architecture, Release 2, accessed 18 November 2010.	HL7	http://www.hl7.org/implement/standards/cda.cfm
[IETF2119]	Request for Comments 2119 – Key words for use in RFCs to Indicate Requirement Levels (S. Bradner)	The Internet Engineering Task Force (IETF) 2011 (Previously via Network Working Group from S. Bradner 1997)	http://www.ietf.org/rfc/rfc2119.txt
[ITU-T2001]	E.123: Notation for national and international telephone numbers, e-mail addresses and Web addresses	ITU-T	http://www.itu.int/rec/T-REC-E.123-200102-I/e