# Design Considerations

This chapter describes the overall design for the Personal Advance Care Plan document. The design considerations are organized to:

1. Describe the functional requirements to be addressed by information shared in the defined document.
2. Explain how the document template design supports multiple levels of information exchanged and why all levels of exchange are valuable when sharing Personal Advance Care Plan documents.
3. Explain why the Personal Advance Care Plan Document established tighter conformance requirements between a section’s human readable text and the associated machine readable entries.
4. Show how the design of the Personal Advance Care Plan Document relates to the design of other C-CDA document types.
5. Explain why the entry templates used in a Personal Advance Care Plan Document utilize standardized question where possible and do not constrain the associated answers.
6. Explain why the Personal Advance Care Document uses nested sections when a structured body is used.
7. Describe standard roles and events populated in a CDA document header as they pertain to the Personal Advance Care Plan document.

## Functional Requirements Supported by the Personal Advance Care Plan Document

## Multiple Levels of Machine Readability Are Supported

The design of the Personal Advance Care Plan Document supports three different levels of machine readability. It allows for the exchange of an unstructured document, a level two CDA document, or a level three CDA document. As health information exchange of patient generated information transitions from paper-based to digital sharing mechanisms, a gradual transition will need to be supported. The Personal Advance Care Plan Document standard supports multiple levels of machine readability so that implementers can gradually and incrementally improve the level of machine readability supported in data sharing documents as concensus around the representation of patient generated data grows.

As background, implementers need to be aware that there are four kinds of HL7 CDA templates: (1) those that constrain the header and body of the document (document-level templates); (2) those that constrain the sections used to make up the body of a document (section-level templates); (3) those that constrain the entries that are used within sections (entry-level templates); and (4) those that constrian participations or act relationships used within other templates. Templates tailor the use of the HL7 CDA standard to exchange data between systems. A variety of terms are used to characterize the level of machine readability supported by a CDA document.

An unstructured CDA document may or may not assert conformance to a document-level template for the header content, but it has a non-xml body. The non-xml body is sometimes called an “unstructured” body, hence the term “unstructured document”.

Different levels of granularity can be used to characterize the machine readability of the contents of a CDA document. The definitions below are established in the CDA R2 standard:

**Table X. Definition of CDA Level’s from the HL7 CDA R2 standard.**

|  |  |
| --- | --- |
| **Level** | **Definition in CDA R2** |
| CDA Level One | The unconstrained CDA specification. |
| CDA Level Two | The CDA specification with section-level templates applied. |
| CDA Level Three | The CDA specification with entry-level (and optionally section-level) templates applied. |

A Level Two CDA includes constraints at the section-level of the document. A machine readable section code is used to represent the type of information in the section.

A Level Three CDA includes constraints at the entry-level of the document. Coded machine readable data is included to aid computer processing of the information contained in a document’s sections.

### Benefits of PACP Unstructured Document Exchange

Exchanging a Personal Advance Care Plan document as an unstructured document actually includes a great deal of structured information in the document’s header, but not in the body, because an unstructured Personal Advance Care Plan document conforms to a specified Personal Advance Care Plan header template.

Use of an unstructured Personal Advance Care Plan document offers a more attainable first step when taking a phased approach to adoption. The rich range of structured data available in the header makes it possible to associate the Personal Advance Care Plan document with the correct person. The header information also can be indexed for efficient searching and retrieval. The structured data in the header also can be re-used by document consuming applications to support other data processing functions.

Figure 4: Level 1 PACP

<ClinicalDocument xmlns="urn:hl7-org:v3"   
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"   
 xmlns:cda="urn:hl7-org:v3" xmlns:sdtc="urn:hl7-org:sdtc">

<!-- \*\* CDA Header \*\* -->

<realmCode code="US"/>

<typeId root="2.16.840.1.113883.1.3" extension="POCD\_HD000040"/>

<!-- US General Header Template -->

<templateId root="2.16.840.1.113883.10.20.22.1.1" extension="2015-08-01"/>

<!--Critical Change for backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.1"/>

<!-- \*\*\* Note: The next templateId, code and title will differ depending on   
 what type of document is being sent. \*\*\* -->

<templateId root="2.16.840.1.113883.10.20.22.1.8" extension="2015-08-01"/>

<!--For backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.8"/>

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### Benefits of PACP Level Two CDA Document Exchange

A Level Two Personal Advance Care Plan includes structured content within the body of the document. A framework of section-level coding creates a context that gives machine processable meaning to the various human readable component sections of the document. The machine readable section-level information indicates the type of information in each section, the author of the section, the subject, and other participant information that tells a computer about the information in each section. In essence, the body of a Level Two CDA document is communicated in meaningful, machine processable parts.

Exchanging a Level Two Personal Advance Care Plan document offers all the same benefits associated with sharing a CDA unstructured document because it conforms to the same Personal Advance Care Plan header template. Additionally, using the section code information, a machine can find the individual sections of a Personal Advance Care Plan document. A Level Two Personal Advance Care Plan document can be parsed by a computer to quickly identify the section of the document that includes documentation about the person’s health care agent assignments or the section that includes their preferences upon death. Specific sections of the document can be rendered by the receiving application without requiring the human reader to scan through the whole document to find the needed information.

Figure 5: Level 2 PACP

<ClinicalDocument xmlns="urn:hl7-org:v3"   
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"   
 xmlns:cda="urn:hl7-org:v3" xmlns:sdtc="urn:hl7-org:sdtc">

<!-- \*\* CDA Header \*\* -->

<realmCode code="US"/>

<typeId root="2.16.840.1.113883.1.3" extension="POCD\_HD000040"/>

<!-- US General Header Template -->

<templateId root="2.16.840.1.113883.10.20.22.1.1" extension="2015-08-01"/>

<!--Critical Change for backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.1"/>

<!-- \*\*\* Note: The next templateId, code and title will differ depending on   
 what type of document is being sent. \*\*\* -->

<templateId root="2.16.840.1.113883.10.20.22.1.8" extension="2015-08-01"/>

<!--For backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.8"/>

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### Benefits of PACP Level Three CDA Document Exchange.

A Level Three Personal Advance Care Plan document includes a structured header just as described for the unstructured and Level Two Personal Advance Care Plan document. It includes structured sections within the body of the document, just as described for a Level Two Personal Advance Care Plan. Additionally, a Level Three Personal Advance Care Plan includes machine readable entries which encode some or all of the human readable information recorded in the document’s sections.

Exchanging a Level Three Personal Advance Care Plan document offers all the same benefits associated with sharing a CDA unstructured or Level Two Personal Advance Care Plan. It conforms to the same Personal Advance Care Plan header template and uses the same section-level coding. Additionally, entry-level information (discrete data elements, not just high-level sections) of a Level Three Personal Advance Care Plan document can be parsed by a computer. The human readable information in a section also is included as machine readable structured data.

When exchanging a Level Three Personal Advance Care Plan, not only can the each section of the Personal Advance Care Plan be found and displayed rapidly, but in addition, the healthcare agent or organ donation preference information could be processed by the application as machine readable data. This capability is not feasible when the Personal Advance Care Plan is a Level Two document and the information in the document is only available as human readable text.

Figure 6: Level 3 PACP

<ClinicalDocument xmlns="urn:hl7-org:v3"   
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"   
 xmlns:cda="urn:hl7-org:v3" xmlns:sdtc="urn:hl7-org:sdtc">

<!-- \*\* CDA Header \*\* -->

<realmCode code="US"/>

<typeId root="2.16.840.1.113883.1.3" extension="POCD\_HD000040"/>

<!-- US General Header Template -->

<templateId root="2.16.840.1.113883.10.20.22.1.1" extension="2015-08-01"/>

<!--Critical Change for backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.1"/>

<!-- \*\*\* Note: The next templateId, code and title will differ depending on   
 what type of document is being sent. \*\*\* -->

<templateId root="2.16.840.1.113883.10.20.22.1.8" extension="2015-08-01"/>

<!--For backwards compatibility-->

<templateId root="2.16.840.1.113883.10.20.22.1.8"/>

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