Topics

- Introduction
- A Reader’s Guide to XML
- HL7 Clinical Document Architecture Overview
- HL7 CDA Supplementary Information
- MIME
- Introduction to the Proposed Implementation Guide
Reviewing the Goals:

- Preserve the notion of predictable content
- Preserves all the work the ASIG has done in identifying the content of specific attachments.
- Provides a less painful ways for payers and providers to get started with attachment
- Switches from HL7 version 2.4 to HL7 Clinical Document Architecture, which is XML-based

Structured Data:
Must We Sell the Future to Gain the Present?

- Present
  - Limited ability of providers to provide structured data
  - ROI available by saving People, Paper, and Postage

- Future
  - increasing levels of autoadjudication
  - better medical management
  - more extensive collection of quality data
  - requires structured data

- Web-based communication models
Syntax

“Legacy” Syntaxes
- HL7 v2 and X12
- Only dealt with through mappers
- Awkward for dealing with text
- Will be used for many years
- Not the best choice for new endeavors

XML
- Was “the future” in 1998
- Ubiquitous low-cost tooling plus part of most mapping products
- XSL = auto-rendering
- equally at home with structured data and text
- Currently the syntax of choice for new endeavors, especially Web-based endeavors

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Syntax vs. Standard vs. Implementation Guide: XML Is Only a Syntax

<table>
<thead>
<tr>
<th>Syntax:</th>
<th>X12 Syntax</th>
<th>HL7 v2.4 Syntax</th>
<th>XML</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard:</td>
<td>277</td>
<td>ORU Message</td>
<td>HL7 Clinical Document Architecture</td>
</tr>
<tr>
<td>Imp. Guide:</td>
<td>004020X104 or 004010X093</td>
<td>Attachments IG or NEDSS IG</td>
<td>Attachments IG</td>
</tr>
</tbody>
</table>

XML is a Set of Standards (Recommendations)

- *Extensible Markup Language (XML) 1.0 (Second Edition)*: [www.w3.org/TR/REC-xml](http://www.w3.org/TR/REC-xml)
- *Extensible Stylesheet Language (XSL), Version 1.0*: [www.w3.org/TR/xsl](http://www.w3.org/TR/xsl/)
- *XML Path Language (XPATH)*: [www.w3.org/TR/xpath](http://www.w3.org/TR/xpath)
- and many others ([www.w3.org](http://www.w3.org))
XML Documents and Elements

(Document: the XML name for a complete utterance (like “message”)

Element: Opening and Closing Tags

<content></content>

<content>Thiothixene 5 mg by mouth three times a day.</content>

PCDATA: “parseable character data”

XML Attributes

Name and value inside the angle brackets of the tag.

<local_markup descriptor="dt_ts">2000-06-28</local_markup>

Sometimes all the info for an element is in attributes

<caption_cd V="18648-6"/>

A special form of element with only one tag:

<caption_cd V="18648-6"/>
Elements Can Bracket Other Elements

```
<section>
  <caption><caption_cd V="18651-0"/>Psych Medications per Plan</caption>
  <paragraph>
    <content>Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.</content>
  </paragraph>
  <paragraph>
    <content>Thiothixene 5 mg by mouth three times a day.</content>
  </paragraph>
  <paragraph>
    <content>Benztropine 1 mg by mouth three times a day.</content>
  </paragraph>
</section>
```

Recursion

```
<section>
  <caption>HL7 Standards</caption>
  <paragraph>
    <content>HL7 has two kinds of standards</content>
  </paragraph>
</section>
<section>
  <caption>XML-Based HL7 Standards</caption>
  <paragraph>
    <content>HL7 XML-based standards include the CDA and Version 3 messaging</content>
  </paragraph>
</section>
```

section element within a section element
Tags and Attributes Do NOT Describe Text

“Decoration”

```
<section>
  <caption>EMS TRANSPORT, ADMITTED AT DESTINATION FACILITY ON TRANSFER</caption_cd V="18589-2"/>
  <caption>EMS TRANSPORT, ADMITTED AT DESTINATION FACILITY ON TRANSFER</caption_cd V="18589-2"/>
  <content>Yes</content>
    <coded_entry>
      <coded_entry.value V="Y" SN="HL70136"/>
    </coded_entry>
  </content>
</section>
```

XML

```
EMS TRANSPORT, ADMITTED AT DESTINATION FACILITY ON TRANSFER. Yes
```

“Rendered” XML

```
EMS TRANSPORT, ADMITTED AT DESTINATION FACILITY ON TRANSFER. Yes
```

Alternate

“Rendered” XML

Case Matters: What’s Wrong With This Picture?

```
<Content>Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.</Content>
```
**“White Space” Is For People**

```
<section>
  <paragraph>
    <content>
      Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.
    </content>
  </paragraph>
  <paragraph>
    <content>
      Thiothixene 5 mg by mouth three times a day.
    </content>
  </paragraph>
</section>
```

To Computer Programs These Two are the Same

```
<section>
  <paragraph>
    Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.
  </paragraph>
  <paragraph>
    Thiothixene 5 mg by mouth three times a day.
  </paragraph>
</section>
```

**“Normalizing” White Space Obscures Paragraphs**

```
paragraph>
  <content>
    915/90853 GROUP THERAPY: SYMPTOM MANAGEMENT ON 7/17,22,24,27,29,31 WITH PSYCHOLOGIST: PATIENT MADE ATTEMPTS TO COME AND PARTICIPATE IN SYMPTOM MANAGEMENT GROUP. PATIENT WAS URGED TO USE ANXIETY CONTROL TECHNIQUES HE HAD BEEN TAUGHT TO TOLERATE INCREASING LONGER STAGES IN GROUP. PATIENT RESPONDED BY BEING ABLE TO STAY AND PARTICIPATE IN GROUP 50% LONGER. LABWORK DONE ON [DATE] 07/17/98 [TEST] LITHIUM LEVEL [RESULT]90 [JUSTIF.] ROUTINE MONITORING OF THERAPEUTIC RESPONSE.
  </content>
</paragraph>
```

915/90853 GROUP THERAPY: SYMPTOM MANAGEMENT ON 7/17,22,24,27,29,31 WITH PSYCHOLOGIST: PATIENT MADE ATTEMPTS TO COME AND PARTICIPATE IN SYMPTOM MANAGEMENT GROUP. PATIENT WAS URGED TO USE ANXIETY CONTROL TECHNIQUES HE HAD BEEN TAUGHT TO TOLERATE INCREASING LONGER STAGES IN GROUP. PATIENT RESPONDED BY BEING ABLE TO STAY AND PARTICIPATE IN GROUP 50% LONGER. LABWORK DONE ON [DATE] 07/17/98 [TEST] LITHIUM LEVEL [RESULT]90 [JUSTIF.] ROUTINE MONITORING OF THERAPEUTIC RESPONSE.
Peek Ahead to CDA: <paragraph> element

<paragraph>
  <content>915/90853 GROUP THERAPY: SYMPTOM MANAGEMENT ON 7/17,22,24,27,29,31 WITH PSYCHOLOGIST: PATIENT MADE ATTEMPTS TO COME AND PARTICIPATE IN SYMPTOM MANAGEMENT GROUP. </content>
</paragraph>

<paragraph>
  <content> PATIENT WAS URGED TO USE ANXIETY CONTROL TECHNIQUES HE HAD BEEN TAUGHT TO TOLERATE INCREASING LONGER STAGES IN GROUP. PATIENT RESPONDED BY BEING ABLE TO STAY AND PARTICIPATE IN GROUP 50% LONGER. </content>
</paragraph>

<paragraph>
</paragraph>

---

Rendered Using HL7’s CDA Attachments Stylesheet

915/90853 GROUP THERAPY: SYMPTOM MANAGEMENT ON 7/17,22,24,27,29,31 WITH PSYCHOLOGIST: PATIENT MADE ATTEMPTS TO COME AND PARTICIPATE IN SYMPTOM MANAGEMENT GROUP.

PATIENT WAS URGED TO USE ANXIETY CONTROL TECHNIQUES HE HAD BEEN TAUGHT TO TOLERATE INCREASING LONGER STAGES IN GROUP. PATIENT RESPONDED BY BEING ABLE TO STAY AND PARTICIPATE IN GROUP 50% LONGER.

Well-Formed XML Documents

- A document is “well-formed” if:
  - The beginning and end tags must nest within one another, instead of overlapping.
  - There must be a single outer element, called the root element, that contains all other elements and text in the document.

Why Are These Items Not Well Formed Documents?

```xml
<caption_cd V="18648-6">
<paragraph>
  <content>
  Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.
  </content>
</paragraph>

<paragraph>
  <content>
  Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.
  </content>
</paragraph>

<paragraph>
  <content>
  Thiothixene 5 mg by mouth three times a day.
  </content>
</paragraph>
```
"Valid" XML Documents: Compliant With A Schema

Schema:
Provides application over the syntax by defining what element names are legal, their attributes and how they nest

Schema Languages: Document Type Definition vs. XML Schema Language

- DTD the original language
  - controls the structure of elements and attributes
  - leaves format of PCDATA and attribute values unspecified
- XSD is the newer approach
  - much more complete than DTD
  - includes data types for PCDATA or attribute values: e.g., number, date
  - allows new data types to be added: (e.g., LOINC code with the hyphen)
- Original CDA used DTD
- XSD schemas developed later
- We use XSD for Attachments
Why Use a Schema?

- Not all applications use a schema
- Those that do:
  - Make it absolutely clear to their trading partner what is acceptable
  - Greatly reduce the amount of editing code they have to write and maintain to avoid “garbage in, garbage out”

Schema is Only Part of the Specifications for Information Exchange

- Similar to X12 syntax rules being available in machine readable form
- A complete specification includes semantics that must be expressed in natural language
- A complete specification includes business rules that cannot be expressed in a schema
Is This Document Well-Formed? Is it Valid?

<section>
  <caption><caption_cd V="18651-0"/>Psych Medications per Plan</caption>
  <paragraph>
    <content>Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.</content>
  </paragraph>
  <paragraph>
    <content>Thiothixene 5 mg by mouth three times a day.</content>
  </paragraph>
  <paragraph>
    <content>Benztropine 1 mg by mouth three times a day.</content>
  </paragraph>
</section>

"Valid" Was A Trick Question!
You Must State Valid With Respect to What Schema

<section xsi:schemaLocation="urn:hl7-org:v3/cda" schema.xsd>
  <caption><caption_cd V="18651-0"/>Psych Medications per Plan</caption>
  <paragraph>
    <content>Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.</content>
  </paragraph>
  <paragraph>
    <content>Thiothixene 5 mg by mouth three times a day.</content>
  </paragraph>
  <paragraph>
    <content>Benztropine 1 mg by mouth three times a day.</content>
  </paragraph>
</section>
Other Parts of an XML Document

XML Declaration

```xml
<?xml version="1.0"?>
```

Processing Instruction

```xml
<?xml-stylesheet type="text/xsl" href="cda.ns.1.xsl"?>
```

Comment

```xml
<signature_cd V="S"/>
<!-- Equivalent to saying "signature on file." -->
```

Introducing XPATH

```xml
<section>
  <caption>Outer Section Added</caption>
  <section>
    <caption><caption_cd V="18651-0"/>Psych Medications per Plan</caption>
    <paragraph>
      <content>Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.</content>
    </paragraph>
    <paragraph>
      <content>Thiothixene 5 mg by mouth three times a day.</content>
    </paragraph>
    <paragraph>
      <content>Benztropine 1 mg by mouth three times a day.</content>
    </paragraph>
  </section>
</section>
```
Nested Elements Thought of as a Tree

A Tree is a Connected Set of “Nodes”
XPath is a Language For Specifying Sets of Nodes

```
XPATH is a Language For Specifying Sets of Nodes
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```

```
A Node Set With Heterogeneous Elements
```
Psych Medications per Plan

Lithium 600 mg by mouth each morning and 900 mg by mouth before sleeping.

Thiothixene 5 mg by mouth three times a day

Benztropine 1 mg by mouth three times a day.
Why Use XPATH?

- Programmer: understood directly by many software tools → shorthand for programming
- Analyst: concise, unambiguous way to communicate with programmers
- Analyst: concise, unambiguous way to communicate with trading partners
- ASIG: precise shorthand for use in specifications

XML Stylesheets

XSL Style Sheet: Mapping rules in a standard language

Style Sheet Processor

HTML, PDF, Word-Processing, XML, Data File...
XML Namespaces:
Bringing Order out of Multi-Group Chaos

International Merchant’s Association Defines an “Order”

<order>
  <number>X1234-99</number>
  <ship-date>2003-02-18</ship-date>
  <item>
    <quantity>24</quantity>
    <product>#123A2 Size 12 cashmere sweaters</product>
  </item>
</order>

Consolidated Clothes Cutters Defines “Product” In Detail

<product>
  <number>123A2</number>
  <description>cashmere sweaters</description>
  <size system='US-Ladies'>12</size>
</product>
XML Namespaces:
Bringing Order out of Multi-Group Chaos

Can we combine the IMA peanut butter with the CCC chocolate?

<order>
  <number>X1234-99</number>
  <ship-date>2003-02-18</ship-date>
  <item>
    <quantity>24</quantity>
    <product>
      <number>123A2</number>
      <description>cashmere sweaters</description>
      <size system='US-Ladies'>12</size>
    </product>
  </item>
</order>

Can we combine the IMA peanut butter with the CCC chocolate?

<order>
  <number>X1234-99</number>
  <ship-date>2003-02-18</ship-date>
  <item>
    <quantity>24</quantity>
    <product>
      <number>123A2</number>
      <description>cashmere sweaters</description>
      <size system='US-Ladies'>12</size>
    </product>
  </item>
</order>

Using the Same Tag for Different Things: Not Good!
XML Namespaces:
Bringing Order out of Multi-Group Chaos

Namespaces Allow the Tags to be Mixed Without Confusion

```
<ima:order xmlns:ima='urn:intl-merchants-assoc.org'>
  <ima:number>X1234-99</ima:number>
  <ima:ship-date>2003-02-18</ima:ship-date>
  <ima:item>
    <ima:quantity>24</ima:quantity>
    <ccc:product xmlns:ccc='urn:consolidated-clothes-cutters.org'>
      <ccc:number>123A2</ccc:number>
      <ccc:description>cashmere sweaters</ccc:description>
      <ccc:size system='US-Ladies'>12</ccc:size>
    </ccc:product>
  </ima:item>
</ima:order>
```

Namespaces can allow HL7 CDA to co-exist in a future X12 XML-based transactions
Attachments/CDA Uses Two Namespaces (Well, OK, Actually Three)

```xml
<levelone
    xmlns="urn:hl7-org:v3/cda"
    xmlns:v3dt="urn:hl7-org:v3/v3dt"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    ...<provider>
        <provider.type_cd V="PRF"/>
        <person>
            <id EX="298379" RT="2.16.840.1.113883.3.933"/>
            <person_name>
                <nm>
                    <v3dt:GIV V="George"/>
                    <v3dt:MID V="F"/>
                    <v3dt:FAM V="Carson"/>
                    <v3dt:SFX V="MD" QUAL="PT"/>
                </nm>
                <person_name.type_cd V="L" S="2.16.840.1.113883.5.200"/>
            </person_name>
        </person>
    </provider>
    ...
</levelone>
```

What is the Namespace for the GIV Element?
What is the Namespace for the provider Element?
Topics

- Introduction
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- **HL7 Clinical Document Architecture Overview**
- HL7 CDA Supplementary Information
- MIME
- Introduction to the Proposed Implementation Guide

CDA Overview

- (See separate presentation)
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ISO Object Identifiers (OIDs)

- ISO/IEC 8824:1990(E)
- Defines identifiers that are unique in the world
- Can identify anything, … organizations, code sets, satellites, fire hydrants … anything
- Delegated assignment authority
- Sequence of numbers, like 2.16.840.1.113883.5.949 represent something like:
  - 2.16.840.1.113883 the delegated assignment authority
  - .5 the kind of thing being assigned
  - .949 the individual entity so identified
Delegated assignment authority

2.16.840.1.113883

Some HL7 Uses for OIDs

- Code sets, e.g., 2.16.840.1.113883.6.5 = SNOMED
  
  <coded_entry.value V="D2-51000" S="2.16.840.1.113883.6.5"/>

- The data type “II” (instance identifier)
  - Extension is a an ID such as a patient number, member number, organization ID, serial # for DME, etc.
  - Root is an OID that makes the extension unique

  <person>
    <id EX="KP00017" RT="2.16.840.1.113883.3.933"/>
    <person_name>
      <nm>
        <GIV V="Robert"/>
        <FAM V="Dolin"/>
        <SFX V="MD"/>
      </nm>
    </person_name>
    <person_name.type_cd V="L" S="2.16.840.1.113883.5.200"/>
  </person>
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CDA Uses Images/External Documents in 3 Ways

- Observation Media (<observation_media>)
  - part of the “attestable” content; without the picture, the document may not be completely understood
  - associated with a specific <content> element
- Non-XML Body (<non_xml>)
  - replaces the body
  - combined with the header, the Non-XML body IS is the attestable content
- Link (<link>)
  - reference to a document or image that is not a part of the attestable content
Use of Observation Media

XSL Rendering to HTML

Keeping the Observation Media
With the CDA Document: MIME

- Multipurpose Internet Mail Extensions
- Standard promulgated by the Internet Engineering Task Force (IETF) as RFC 2045
- Originally used for email with attachments, now used for Web and in other contexts
- Divides the entire “message” into sections for the message itself and associated files (e.g., attachments)
Sending an “Attachment” to a CDA Attachment

- The entire MIME document goes in the BIN segment of the 275
- The MIME Document is broken down into parts
  - Part 1: The XML Document
  - Parts 2 - N: The related documents (e.g., rash.jpg)
- Each of parts 2-N includes a file name
- When any part is binary (e.g., rash.jpg) it is encoded in Base64

Example Using MIME Package

```plaintext
Mime-version: 1.0
Content-Type: multipart/mixed;
boundary="192.168.0.132.1.69632.1044136280.905.11308"

--192.168.0.132.1.69632.1044136280.905.11308
Content-Type: application/x-hl7-cda-level-one+xml
Content-Disposition: inline; filename=CDA_rich_sample.noDTD.xml
<?xml version="1.0"?>
<levelone>...
  ...
  <content>Erythematous rash, palmar surface, left index finger.
  </content>
  ...
--192.168.0.132.1.69632.1044136280.905.11308
Content-Type: image/jpeg
Content-Transfer-Encoding: base64
Content-Disposition: attachment; filename=rash.jpeg
9j/4AAoSkZJRgABAQEAeAB4AAD/2wBDAAEBAQEBAQEBAQEBAQEBAQEBAQEBAQEBAQEBAQEB
AQEBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
"192.168.0.132.1.69632.1044136280.905.11308"

```

28 April 2003 © 2003 HL7 56
When the Entire Attachment is an Image: <non_xml>

- Procedure and format is the same as the example
- The XML portion includes only the header and the <non_xml> body
- The attachments represent the pages of the actual document

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- Preserve the notion of predictable content
- Preserves all the work the ASIG has done in identifying the content of specific attachments.
- Provides a less painful ways for payers and providers to get started with attachment
- Switches from HL7 version 2.4 to HL7 Clinical Document Architecture, which is XML-based

“Human-Decision” vs. “Computer-Decision” Variants

<table>
<thead>
<tr>
<th>Human-Decision Variant</th>
<th>Computer-Decision Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Matches the most prevalent workflow: a person reviewing the information to make a decision</td>
<td>– Permits computer-assisted adjudication or autoadjudication</td>
</tr>
<tr>
<td>– “Low-impact” on health plans (easy to display using common tools)</td>
<td>– Includes specifications for breaking data down into computer-accessible elements</td>
</tr>
<tr>
<td>– “Low-impact” on providers (supports low-cost document preparation and “fax-like” use of existing paper or document images)</td>
<td>– Includes LOINC codes to identify the questions</td>
</tr>
<tr>
<td></td>
<td>– Processable in “Human-Decision” mode by health plans that have not adopted a computer-decision approach.</td>
</tr>
<tr>
<td></td>
<td>– Can be applied selectively, one attachment at a time.</td>
</tr>
</tbody>
</table>
Outline of a Proposed Approach

- 277 and 275 are largely unchanged -- LOINC still used to identify questions and answers; however, the BIN segment contains CDA documents
- Substantive content of booklets are unchanged (i.e., no change to what may be asked and what must be sent when the whole attachment is requested) -- unless we want to tinker for other reasons
- Each booklet supports structured/coded data or plain text or a document image

What Happens to Computer-Decision Structure?

- Providers "may" code the details with LOINC codes if they "can", but initially have no incentive to do so
- Payers "can" ignore the LOINC detailed codes -- indeed they will do so automatically if they use the viewing stylesheet
- Payers that choose to auto-adjudicate claims in a process that includes attachments will announce to providers that those that choose to add use structure and detailed LOINC codes will have their claims adjudicated faster
  - no need for a new standard at that time
  - the move to the higher level is incentive-based
Uniform Treatment of Structure

Providers
- Sends page images within CDA
- Sends Person-Readable CDA
- Sends Computer-Processable CDA

Payers
- Uses People Reading Attachments to Adjudicate Claims
- Uses Computer to Autoadjudicate Certain Claims

Attachments in CDA

Gain Immediate Benefits...

• Providers
  - Maximum opportunity for immediate participation
  - ROI available by saving People, Paper, and Postage

• Payers
  - Limit early implementation costs to basic Qs and As
  - Less early use of LOINC codes (could limit it to attachment IDs if they preferred)
  - Initial investment more justified by higher provider participation
## ...But Don’t Sell Out the Future

**Providers**
- Health plan incentives for structured data provides financial benefit for acquiring a computer-based patient record
- Timing for conversion is a business decision rather than an enforced decision

**Health Plans**
- After the basic ROI is obtained, advance to the use of structured data without another regulatory cycle
- Selectively approach the use of structured data as business opportunities arise, rather than being forced to by a regulation

## “CDA” vs. “CDA Attachment”

<table>
<thead>
<tr>
<th>CDA</th>
<th>Computer-Decision Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Very general -- accepts virtually any content</td>
<td>- Very specific content, specified by booklets</td>
</tr>
<tr>
<td>- Many optional features impose obligations on receiver to deal with them</td>
<td>- Disallow those optional features that are not necessary for Attachments use cases</td>
</tr>
<tr>
<td>- LOINC codes optional</td>
<td>- LOINC codes required for document type</td>
</tr>
<tr>
<td></td>
<td>- LOINC codes required for each answer part in “computer-decision variant”</td>
</tr>
<tr>
<td></td>
<td>- Uses local markup with specified data types in computer-decision variant</td>
</tr>
</tbody>
</table>

- No data types in body

XML Documents

<table>
<thead>
<tr>
<th>CDA Documents</th>
<th>CDA Attachments</th>
</tr>
</thead>
</table>
Documents and Authorities Only Slightly Changed

Organizations of HL7 Attachments IG

- I - Introduction (not normative)
  - Minor updates from prior version
- II - Attachment (not normative)
  - Introduction of terms and concepts
- III CDA Attachments Compliance Statements (normative)
  - definitions of terms
  - usual use of “shall” and “should”
  - yes-no statements about a CDA document or determine if sender is compliant
  - yes-no statements about actions of the receiver determine if the receiver is compliant
Additional Information Message Booklets

- Substantive content (questions, answer parts, and response code tables) unchanged
- Previous “message variant” sections removed
- Coding examples for both the human-decision and computer-decision variants
- Altered headings for the value table

Revised Value Table

<table>
<thead>
<tr>
<th>LOINC Code</th>
<th>Description</th>
<th>Value</th>
<th>Data Type</th>
<th>Card</th>
<th>Response Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>27513-1</td>
<td>Part</td>
<td>ALCOHOL-SUBSTANCE ABUSE REHABILITATION TREATMENT PLAN, DATE RANGE (FROM/THROUGH) OF NEXT PLANNED TREATMENT (COMPOSITE)</td>
<td></td>
<td>1,1</td>
<td></td>
</tr>
<tr>
<td>27488-6</td>
<td></td>
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