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HL7 CDA (Clinical Document Architecture) in Structured Diagnostic Reporting
Goals of this talk

• Promote use of standards for SR results
  – Reporting results are needed in many environments and at future times
  – Standards facilitate communication across proprietary boundaries and through time

• Not to teach the CDA standards, but let you know what’s there, what it’s for, when to use it, how to get it.
Role of CDA

• CDA is for exchange
  – Not an authoring template. Original design of CDA always envisioned that applications would use some internal document template and then transform to CDA for exchange

• CDA is for representing medical data in permanent records.

• CDA is a key part of HL7 V3
  – V3 messaging uptake mostly in government projects
  – CDA is finding much wider use
CDA Use Cases

- Diagnostic and therapeutic procedure reports
- Encounter / discharge summaries
- Patient history & physical
- Referrals / prescriptions

- Uniform format for all clinical documents
  - Fairly strict for header
  - Flexible for body content
Sending & Storing CDA

- **HL7 V.2**
  - MDM messages
  - ORU messages

- **DICOM**
  - Storage on DICOM media
  - 1.2.840.10008.5.1.4.1.1.104.2 (Encapsulated CDA Storage SOP Class)

- **IHE**
  - XDS
Key Aspects of the CDA

• CDA documents are encoded in XML
• CDA documents derive their meaning from the HL7 Reference Information Model (RIM) and use HL7 V3 data types
• A CDA document consists of a header and a body
  – Header is consistent across all clinical documents - identifies and classifies the document, provides information on patient, provider, encounter, and authentication
  – Body contains narrative text / multimedia content (level 1), optionally augmented by coded equivalents (levels 2 & 3)
CDA Release 2
Information Model
CDA Structured Body

Arrows are Act Relationships
- *Has component, Derived from, etc.*
Entries are coded clinical statements
- *Observation, Procedure, Substance administration, etc.*
Hard Pill to Swallow

• CDA requires human-readable “Narrative Block”, all that is needed to reproduce the legally attested clinical content
• CDA allows optional machine-readable coded “Entries”, which drive automated processes
• Narrative may be flagged as derived (act relationship code = DRIV) from Entries
  – Textual rendering of coded entries’ content, and contains no clinical content not derived from the entries
• WHY: General method for coding clinical statements is a hard, unsolved problem
  – Very difficult to project rendering capability into all current and future viewing environments
• ➔ If you’re creating a CDA report with coded content, you should know how to render it, so do it now and store it along with the coded content.
• Attestation applies only to the narrative content, but that does not mean that the coded content is allowed to be wrong.
History of Present Illness

Henry Levin, the 7th is a 67 year old male referred for evaluation of asthma in his teens. He was hospitalized twice in his teens and has been able to be weaned off steroids for the past 10 years.

Past Medical History

- Asthma
- Hypertension (see HTN.cda for details)
- Osteoarthritis, right knee

Medications

<title>Past Medical History</title>
- <text>
  - <list>
    - <item>
      <content ID="a1">Asthma</content>
    </item>
    + <item>
    + <item>
  </list>
</text>
- <entry>
  - <observation classCode="COND" moodCode="EVN">
    <code code="39154008" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" display="clinical diagnosis"/>
    <effectiveTime value="1950"/>
    - <value xsi:type="CD" code="195967001" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" display="Asthma"> 
      <originalText>
        <reference value="#a1"/>
      </originalText>
    </value>
  </observation>
</entry>
CDA Implementation Guides

• Balloted as HL7 Informative Documents
• Describe what amount to “templates” for CDA Documents.
  – Specify constraints on CDA content
  – Some provide Schematron tools for validation of instances
  – Each Implementation Guide has a Template ID attribute that is included in the root element of the conforming document
• Continuity of Care Document IG developed in cooperation with ASTM
• Diagnostic Imaging Report IG developed in cooperation with DICOM, together with SR→CDA transformation in (pending) Supplement 135.
Summary

• CDA is a useful format for communicating structured diagnostic reports to clinical user and EHR settings
• CDA Diagnostic Report Implementation Guide provides direction for encoding of header components
• Pending DICOM Supplement 135 provides guidance for transformation of DICOM SR into CDA
• CDA Standards are available at http://www.hl7.org, but, yeah, HL7 will want you to join and/or pay.