Slide 1

Networking and Health
Information Exchange

Unit 4f
Basic Health Data Standards

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Slide 2

Unit 4f Objectives

• Discuss Clinical Data Architecture,
  Continuity of Care Document, and
  Continuity of Care Record Standards

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Clinical Document Architecture

• Document markup standard that specifies
  the structure and semantics of "clinical
  documents" for the purpose of exchange.
• Defined information object that can include
  text, images, sounds, and other
  multimedia content.
• The architecture specifies the schemas
  required for exchange.

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Slide 4

### Characteristics of CDA

- Persistence
- Stewardship
- Potential for authentication
- Context
- Wholeness
- Human readability

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### Key aspects of CDA

- The CDA specification is richly expressive and flexible.
- Encoded in XML.
- Data elements derive their meaning from the HL7 RIM
- Uses the HL7 Data Types.

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### CDA

- Allow cost effective implementation across as wide a spectrum of systems as possible.
- Support exchange of human-readable documents between users, including those with different levels of technical sophistication.
- Promote exchange that is independent of the underlying transfer or storage mechanism.

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**Major components**

- A CDA document is wrapped by the <ClinicalDocument> element, and contains a header and a body.
- The header lies between the <ClinicalDocument> and the <StructuredBody> elements and identifies and classifies the document and provides information on authentication, the encounter, the patient, and the involved providers.

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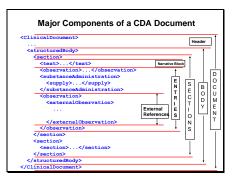**XML Markup for CDA**

- XML tag is defined <tag>
- Data is expressed as data element name
- Data value is "value"
- Each entry has a start tag <tag> and a stop tag <tag>.
- Entries may be nested.
- <code> code = "11488-4" </code>

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Major Components of a CDA Document

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## Header components

- Contextual header
  - Author
  - Confidentiality
  - Data enterer
  - Human language
  - Informant
  - Legal authenticator
  - Participant
  - Record target

sets context for the entire document

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## Major components

```
<ClinicalDocument>
  ... CDA Header ...
  <StructuredBody>
    <section>
      <text>...</text>
      <Observation>...</Observation>
      <Observation>
        <reference>
          <ExternalObservation>...</ExternalObservation>
        </reference>
      </Observation>
    </section>
    <section>
      <section>...</section>
    </section>
  </StructuredBody>
</ClinicalDocument>
```

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## CDA specification

The CDA specification permits the use of document codes and section codes. Thus, it is possible to differentiate a "Consultation Note" from a "Discharge Summary" because the two will have distinct document codes in the document instance.

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```
<section>
<text>
<content emphasis="bold">
    This is rendered bold,
        <content emphasis="italics">
            this is rendered bold and italicized,
        </content>
    this is rendered bold.
</content>
</text>
</section>
```

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```
section>
    <code code="10153-2" codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"/>
    <title>Past Medical History</title>
    <text>
        There is a history of <content ID="a1">Asthma</content>
    </text>
    <entry>
        <Observation>
            <code code="84100007"
                codeSystem="2.16.840.1.113883.6.96"
                codeSystemName="SNOMED CT"
                displayName="history taking (procedure)"/>
            <value xsi:type="CD" code="195967001"
                codeSystem="2.16.840.1.113883.6.96"
                codeSystemName="SNOMED CT"
                displayName="Asthma">
                <originalText>
                    <reference value="#a1"/>
                </originalText>
            </value>
        </Observation>
    </entry>
</section>
```

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## LOINC document codes

- 28568-4 Visit Note Emergency Department Physician
- 34862-3 Admission Evaluation Note Inpatient Attending General Medicine
- 11488-4 Consultation Note {Setting} {Provider}

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## Continuity of Care Document

- The approach taken in the development of CCD is to reflect the CCR requirements in a CDA R2 framework, and to do so in such a way that CDA is constrained in accordance with models being developed by other HL7 committees.
- This has helped accelerate convergence within HL7 around a common "clinical statement" model, leading to closer collaboration with several domain committees, such as:

  - **Results:** Lab committee
  - **Family History:** Genomics committee
  - **Allergies, Problems:** Patient Care committee
  - **Medications:** Pharmacy committee

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## CCD Sections

- Payers
- Advance Directives
- Support
- Functional Status
- Problems
- Family History
- Social History
- Alerts, allergies, AE

- Medications
- Medical Equipment
- Immunizations
- Vital Signs
- Results
- Procedures
- Encounters
- Plan of Care

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## CCD

```
<Results>
 <Result>
  <CCRDataObjectID>
   2.16.840.1.113883.19.1
  </CCRDataObjectID>
  <DateTime>
   <Type>
    <Text>Assessment Time</Text>
   </Type>
   <ExactDateTime>
    20004071430
   </ExactDateTime>
  </DateTime>
  <Type>
   <Text>Hematology</Text>
  </Type>
  <Description>
   <Text>CBC WO DIFFERENTIAL</Text>
   <Code>
    <Value>43789009</Value>
    <CodingSystem>SNOMED CT</CodingSystem>
   </Code>
  </Description>
  <Status><Text>Final Results</Text></Status>
```

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## CCD - 2

```
<section>
  <templateId root="2.16.840.1.113883.10.20.1.14"/>
  <code code="30954-2"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"/>
  <title>Laboratory results</title>
  <text>
    CBC (04/07/2000): HGB 13.2; WBC 6.7; PLT 123*
  </text>
  <entry>
    <organizer classCode="BATTERY" moodCode="EVN">
      <templateId
root="2.16.840.1.113883.10.20.1.32"/>
      <id root="2.16.840.1.113883.19" extension="1"/>
      <code code="43789009"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        displayName="CBC WO DIFFERENTIAL"/>
      <statusCode code="completed"/>
      <effectiveTime value="200004071430"/>
```

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## Continuity of Care Record

- Patient health summary detail
- Flexible document
- Relevant and timely core information about patients for exchange among patients
- Standard from ASTM
- XML syntax

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## CCR content

- Demographics
- Diagnosis
- Problem list
- Medication
- Allergies
- Insurance
- Care Plan

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## Summary

- Structure complicated but rote
- Content simple – data elements with XML tags
- Permits migration from narrative text to coded data.
- Internationally becoming the exchange document of choice.

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