Continuity of Care Document - CCD

Presentation to WorldVistA
January 12, 2008

George Lilly
ContinuityOfCare.net
Agenda

• What is the CCD?
• CCD Sections
• CCD - Human Readable
• CCD - Machine Readable
• CCD Use Cases
• CCD and HIPAA
• CCD and CCHIT
• CCD and WorldVista
• Opensource CCD Support
• Continuityofcare.net
What is the CCD?

• The Continuity of Care Document (CCD) is an HL7 XML standard adopted in March, 2007 for the exchange of electronic clinical records

• The CCD represents a merger of the CCR (ASTM) and the CDA (HL7) and replaces both of these (CCD=CCR+CDA)

• HL7 has also negotiated with CMS to use the CCD in place of the CDA for the HIPAA Claims Attachment Rule

• The CCD is both “human readable” (via browser) and “machine readable” (import into EHR system) and has wide healthcare industry support
CCD Sections

- EHR
  - CCRDocumentObjectID
  - DateTime
  - Patient
  - From
  - To
  - Purpose
  - Body
    - Insurance
    - AdvanceDirectives
    - Support
    - FunctionalStatus
    - Problems

- FamilyHistory
- SocialHistory
- Alerts
- Medications
- Allergies
- MedicalEquipment
- Immunizations
- VitalSigns
- Results
- Procedures
- Encounters
- PlanOfCare
- HealthCareProviders
Good Health Clinic Continuity of Care Document

Created On: April 7, 2000

Patient: Henry Levin, the 7th
Birthday: September 24, 1932
Guardian: Kenneth Ross
17 Daws Rd.
Blue Bell, MA, 02368
tel: (555)555-1212

MRN: 996-756-495
Sex: Male
Next of Kin: Henrietta Levin
tel:(999)555-1212

Table of Contents
- Summary Purpose
- Payers
- Advance Directives
- Functional Status
- Problems
- Family History
- Social History
- Allergies, Adverse Reactions, Alerts
- Medications
- Medical Equipment
- Immunizations
- Vital Signs
- Results
- Procedures
- Encounters
- Plan
Human Readable

**Summary Purpose**
Transfer of care

**Payers**

<table>
<thead>
<tr>
<th>Payer name</th>
<th>Policy type / Coverage type</th>
<th>Covered party ID</th>
<th>Authorization(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Health Insurance</td>
<td>Extended healthcare / Self</td>
<td>1414a520-7aee-11db-9f81-0800200c9a66</td>
<td>Colonoscopy</td>
</tr>
</tbody>
</table>

**Advance Directives**

<table>
<thead>
<tr>
<th>Directive</th>
<th>Description</th>
<th>Verification</th>
<th>Supporting Document(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resuscitation status</td>
<td>Do not resuscitate</td>
<td>Dr. Robert Dolin, Nov 07, 1999</td>
<td>Advance directive</td>
</tr>
</tbody>
</table>

**Functional Status**

<table>
<thead>
<tr>
<th>Functional Condition</th>
<th>Effective Dates</th>
<th>Condition Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependence on cane</td>
<td>1998</td>
<td>Active</td>
</tr>
<tr>
<td>Memory impairment</td>
<td>1999</td>
<td>Active</td>
</tr>
</tbody>
</table>

**Problems**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Effective Dates</th>
<th>Condition Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>1990</td>
<td>Active</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Jan 1997</td>
<td>Resolved</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>Mar 1999</td>
<td>Resolved</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>Jan 1997</td>
<td>Resolved</td>
</tr>
</tbody>
</table>
## Family History

**Father (deceased)**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Age At Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial Infarction (cause of death)</td>
<td>57</td>
</tr>
<tr>
<td>Hypertension</td>
<td>40</td>
</tr>
</tbody>
</table>

**Mother (alive)**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Age At Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>30</td>
</tr>
</tbody>
</table>

## Social History

<table>
<thead>
<tr>
<th>Social History Element</th>
<th>Description</th>
<th>Effective Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette smoking</td>
<td>1 pack per day</td>
<td>1947 - 1972</td>
</tr>
<tr>
<td>&quot;</td>
<td>None</td>
<td>1973 -</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>None</td>
<td>1973 -</td>
</tr>
</tbody>
</table>

## Allergies, Adverse Reactions, Alerts

<table>
<thead>
<tr>
<th>Substance</th>
<th>Reaction</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillin</td>
<td>Hives</td>
<td>Active</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Wheezing</td>
<td>Active</td>
</tr>
<tr>
<td>Codeine</td>
<td>Nausea</td>
<td>Active</td>
</tr>
</tbody>
</table>
### Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Instructions</th>
<th>Start Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol inhalant</td>
<td>2 puffs QID PRN wheezing</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td>Clopidogrel (Plavix)</td>
<td>75mg PO daily</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>25mg PO BID</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td>Proscarone</td>
<td>20mg PO daily</td>
<td>Mar 28, 2000</td>
<td>Active</td>
</tr>
<tr>
<td>Cephalaxin (Keflex)</td>
<td>500mg PO QID x 7 days (for bronchitis)</td>
<td>Mar 28, 2000</td>
<td>No longer active</td>
</tr>
</tbody>
</table>

### Medical Equipment

<table>
<thead>
<tr>
<th>Supply/Device</th>
<th>Date Supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic implantable cardiovertor/defibrillator</td>
<td>Nov 1999</td>
</tr>
<tr>
<td>Total hip replacement prosthesis</td>
<td>1998</td>
</tr>
<tr>
<td>Wheelchair</td>
<td>1999</td>
</tr>
</tbody>
</table>

### Immunizations

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza virus vaccine, IM</td>
<td>Nov 1999</td>
<td>Completed</td>
</tr>
<tr>
<td>Influenza virus vaccine, IM</td>
<td>Dec 1998</td>
<td>Completed</td>
</tr>
<tr>
<td>Pneumococal polysaccharide vaccine, IM</td>
<td>Dec 1998</td>
<td>Completed</td>
</tr>
<tr>
<td>Tetanus and diphtheria toxoids, IM</td>
<td>1997</td>
<td>Completed</td>
</tr>
</tbody>
</table>
Vital Signs

<table>
<thead>
<tr>
<th>Date / Time:</th>
<th>Nov 14, 1999</th>
<th>April 7, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>177 cm</td>
<td>177 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>88 kg</td>
<td>88 kg</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>132/86 mmHg</td>
<td>145/88 mmHg</td>
</tr>
</tbody>
</table>

Results

<table>
<thead>
<tr>
<th></th>
<th>March 23, 2000</th>
<th>April 06, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HGB (M :13-18 g/dl; F 12-16 g/dl)</td>
<td>13.2</td>
<td></td>
</tr>
<tr>
<td>WBC (4.3-10.8 10^3/ul)</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>PLT (135-145 meq/l)</td>
<td>123*</td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA (135-145 meq/l)</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>K (3.5-5.0 meq/l)</td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>CL (98-106 meq/l)</td>
<td></td>
<td>102</td>
</tr>
<tr>
<td>HCO3 (18-23 meq/l)</td>
<td></td>
<td>35*</td>
</tr>
</tbody>
</table>

Procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hip replacement, left</td>
<td>1998</td>
</tr>
</tbody>
</table>
## Encounters

<table>
<thead>
<tr>
<th>Encounter</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checkup Examination</td>
<td>Good Health Clinic</td>
<td>Apr 07, 2000</td>
</tr>
</tbody>
</table>

## Plan

<table>
<thead>
<tr>
<th>Planned Activity</th>
<th>Planned Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary function test</td>
<td>April 21, 2000</td>
</tr>
</tbody>
</table>

*Electronically generated by: Good Health Clinic on April 7, 2000*
<?xml version="1.0"?>
<xml-stylesheet type="text/xsl" href="CDA.xsl"/>
</!-- The following sample document depicts a fictional character’s health summary. Any resemblance to a real person is coincidental. -->
<ClinicalDocument xmlns="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:hl7-org:v3 CDA.xsd">
</!--

******************************************************************************************
CDA Header
******************************************************************************************
</-->
<typeId root="2.16.840.1.113883.1.3" extension="POCD_HD000040"/>
<templateId root="2.16.840.1.113883.10.20.1"/>
<id root="db734647-fc99-424c-a864-7e3cda82e703"/>
<code code="34133-9" codeSystem="2.16.840.1.113883.6.1" displayName="Summarization of episode note"/>
<title>Good Health Clinic Continuity of Care Document</title>
effectiveTime value="20000407130000+0500"/>
<confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
<languageCode code="en-US"/>
<recordTarget>
    <patientRole>
        <id extension="996-756-493" root="2.16.840.1.113883.19.5"/>
        <patient>
            <name>
                <given>Henry</given>
                <family>Levin</family>
                <suffix>the 7th</suffix>
            </name>
            <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>
            <birthTime value="19320924"/>
        </patient>
        <providerOrganization>
            <id root="2.16.840.1.113883.19.5"/>
            <name>Good Health Clinic</name>
        </providerOrganization>
    </patientRole>
</recordTarget>
CCD Use Cases - Personal Health Communication

- Acute Care Summary of Care to Personal Health Record
- Family provides Health Summary to Adult Day Care Center
- Personal Health Advocacy and Management
- Lifespanning Health Records Kept by Individuals
- Nursing Home to Personal Health Record
- PT or OT to Personal Health Record
- CCRC to Personal Health Record for Personal Wellness

Source: AHIMA, CAST
CCD Use Cases - Transfer of Care

- Nursing Home to Home Health
- Home Health to Acute Care
- Nursing Home to Emergency Room
- Hospital to Nursing Home
- Hospital to Home Health
- Assisted Living to Nursing Home
- Nursing Home to Assisted Living
- PAC LTC to Hospital
- Nursing Home to Nursing Home
- Nursing Home to Hospital
- Home Care to Home Care
- Home Care to Nursing Home
- Home Care to Assisted Living

source: AHIMA, CAST
CCD Use Cases - Coordination of Care

- Attending Physician in a Nursing Home Setting
- Nursing Home Resident Regularly Visits Dialysis
- Home Care Communication with Family Physician
- Home Health Care delivered to an Assisted Living Resident
- Coordination of Care - Cancer
- Home Care to Acute Care

*source: AHIMA, CAST*
CCD Use Cases - Health Management / Interdisciplinary Care

- Acute Care informs Family Physician
- Chronic Care Management Over Time
- Physical Therapist Charts to Nursing Home or Home Health Health Record
- Interdisciplinary Care: Cancer Treatment Center
- PT or OT to Nursing Home
- PT or OT to Home Health
- Rehab to Home Health
- Physician Requests Nutrition Consultation

source: AHIMA, CAST
CCD Use Cases - Administrative Uses

- Managed Care Pre-Certification Request
- Part D Pre-Certification
- Billing Attachments
- Nursing Home Data Reporting
- Home Care Data Reporting

source: AHIMA, CAST
CCD Use Cases - Research Uses

- De-identified Health Record Summary provided to Researcher
- Nursing Home to research
- Home Care to research

source: AHIMA, CAST
CCD and HIPAA

- The CCD will form the basis for the HIPAA Claims Attachment Rule (275)
  - Claims Attachement Transactions will be the CCD transmitted via X12 EDI
- Claims Attachments are being pilot tested today
- The HIPAA Claims Attachment Notice of Proposed Rulemaking (NPRM) is expected this year
- 26 months after the NPRM, the Rule will be final and all Providers will be required to use the transaction
- The CCD will be in wide use for Claims Attachment by 2010
CCD and CCHIT

- CCHIT (Certification Commission for Healthcare Information Technology) requires CCD support for exchanging medical records in 2008
- WorldVistA has obtained CCHIT certification
- WorldVistA will need to support the CCD to remain CCHIT certified
CD and WorldVista

- The WorldVista CCD project has been underway for several months
- It meets on weekly (Tuesday night) conference calls
- Current focus is CCD mapping to WorldVista and a MUMPS CCD prototype
- We use email and the Internet to collaborate
- Looking for volunteers to help (please speak to Nancy)
WorldVista XML Support

- HL7 Export Utility (Part of VistA)
- EasyObjects (VistALink) (Part of VistA)
- M2Web (Jim Self)
- Mumps XML Parser (Part of VistA)
- Kevin's XML Export Tool

- none handle the CCD yet - we are evolving the solution
Kevin's XML Export Tool Output

- <FILE id="2" label="PATIENT">
  - <Record id="2">
    - <Field id=".01" label="NAME" type="FREE TEXT">
      <LINE>ZZ PATIENT, TEST TWO</LINE>
    </Field>
    - <Field id=".02" label="SEX" type="SET">
      <LINE>MALE</LINE>
    </Field>
    - <Field id=".03" label="DATE OF BIRTH" type="DATE/TIME">
      <LINE>12/25/1957</LINE>
    </Field>
    - <Field id=".033" label="AGE" type="COMPUTED">
      <LINE>49</LINE>
    </Field>
    - <Field id=".05" label="MARITAL STATUS" type="POINTER">
      <LINE>UNKNOWN</LINE>
    </Field>
    - <Field id=".07" label="OCCUPATION" type="FREE TEXT">
      <LINE>SAILOR</LINE>
    </Field>
    - <Field id=".08" label="RELIGIOUS PREFERENCE" type="POINTER">
      <LINE>UNKNOWN_NO PREFERENCE</LINE>
    </Field>
    - <Field id=".083" label="CHECK FOR DUPLICATE" type="SET">
      <LINE>YES</LINE>
    </Field>
    - <Field id=".0905" label="!U4N" type="COMPUTED">
      <LINE>Z</LINE>
    </Field>
    - <Field id=".091" label="REMARKS" type="FREE TEXT">
      <LINE>Test patient only, please use to test, train</LINE>
    </Field>
    - <Field id=".092" label="PLACE OF BIRTH [CITY]" type="FREE TEXT">
      <LINE>BOSTON</LINE>
  </Record>
</FILE>
Opensource CCD Support

- Indivo, an opensource system developed by Children's Hospital in Boston, provides a Personal Healthcare Record storage and access system using Webservices
  - Dossia, the employee Personal Healthcare Record service, will use Indivo as its core technology
- Mirth, an opensource HL7 messaging system, can be used to exchange the CCD between authorized systems
Continuityofcare.net

- Website started to support the WorldVistA CCD project
- Future plans are to develop seamless CCD interoperability between opensource systems:
  - WorldVista
  - OpenEMR
  - Indivo
  - Mirth
- currently looking for sponsors