John D’Amore

Topic Name?
Authors, Performers and Other Participants in C-CDA: When to use which and what they mean

What problem are you trying to solve?
Authors and performers can be used to document key person/organization information within individual C-CDA entries. These can help meet requirements for data provenance, as required by the United States Cord Data for Interoperability, but they impart different meaning with different clinical sections. This session will work through easy-to-understand definitions of what an author or performer means within different clinical sections.

How are you planning on leading the discussion? (What is your planned approach, what steps will you take?)
There will be a combination of slides and XML examples. We will be actively soliciting input from C-CDA creators and consumers attending the C-CDA IAT.

What samples do you plan to use to support the discussion? (Please describe or attach sample xml you will be reviewing.)
We will use examples already approved within https://cdasearch.hl7.org as well as new examples to be created. Here are three examples:
1. https://github.com/HL7/C-CDA-Examples/blob/master/Results/Result%20with%20lab%20location/Result%20with%20lab%20location(C-CDAR2.1).xml
3. https://github.com/HL7/C-CDA-Examples/blob/master/Problems/Active%20Problem/Active%20Problem(C-CDA2.1).xml

What actions do you want attendees to do before or what samples or examples do you want them to bring to the session?
No prior work required except for reviewing how current C-CDA generators and receivers

What actions are you expecting to happen as a result of your session?
We’ll have a few slides, which we could writeup as an informative document available on https://cdasearch.hl7.org. This could be integrated into future Companion Guides of C-CDA as well.
Agenda

- USCDI and Pressure for Data Provenance
- Review Definitions
- Meaning by Clinical Domain
- Examples
  - A diagnosis made and managed by another provider
  - A medication prescribed by another provider
  - A vital sign performed by one person and recorded by another
  - A lab order and its result
- Next Steps
<table>
<thead>
<tr>
<th>Assessment and Plan of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Care Team Members</strong></td>
</tr>
<tr>
<td><strong>Clinical Notes</strong></td>
</tr>
<tr>
<td>• Consultation Note</td>
</tr>
<tr>
<td>• Discharge Summary Note</td>
</tr>
<tr>
<td>• History &amp; Physical</td>
</tr>
<tr>
<td>• Imaging Narrative</td>
</tr>
<tr>
<td>• Laboratory Report Narrative</td>
</tr>
<tr>
<td>• Pathology Report Narrative</td>
</tr>
<tr>
<td>• Procedure Note</td>
</tr>
<tr>
<td>• Progress Note</td>
</tr>
<tr>
<td><strong>Medications</strong></td>
</tr>
<tr>
<td>• Medications</td>
</tr>
<tr>
<td>• Medication Allergies</td>
</tr>
<tr>
<td><strong>Procedures</strong></td>
</tr>
<tr>
<td><strong>Provenance</strong></td>
</tr>
<tr>
<td>• Author Time Stamp</td>
</tr>
<tr>
<td>• Author Organization</td>
</tr>
<tr>
<td><strong>Problems</strong></td>
</tr>
<tr>
<td><strong>Unique Device Identifier(s) for a Patient’s Implantable Device(s)</strong></td>
</tr>
<tr>
<td><strong>Goals (Patient Goals)</strong></td>
</tr>
<tr>
<td><strong>Health Concerns</strong></td>
</tr>
<tr>
<td><strong>Immunizations</strong></td>
</tr>
<tr>
<td><strong>Patient Demographics</strong></td>
</tr>
<tr>
<td>• First Name</td>
</tr>
<tr>
<td>• Last Name</td>
</tr>
<tr>
<td>• Previous Name</td>
</tr>
<tr>
<td>• Middle Name (incl. middle initial)</td>
</tr>
<tr>
<td>• Suffix</td>
</tr>
<tr>
<td>• Birth Sex</td>
</tr>
<tr>
<td>• Date of Birth</td>
</tr>
<tr>
<td>• Race</td>
</tr>
<tr>
<td>• Ethnicity</td>
</tr>
<tr>
<td>• Preferred Language</td>
</tr>
<tr>
<td>• Address</td>
</tr>
<tr>
<td>• Phone Number</td>
</tr>
<tr>
<td><strong>Smoking Status</strong></td>
</tr>
<tr>
<td><strong>Vital Signs</strong></td>
</tr>
<tr>
<td>• Diastolic BP</td>
</tr>
<tr>
<td>• Systolic BP</td>
</tr>
<tr>
<td>• Body height</td>
</tr>
<tr>
<td>• Body weight</td>
</tr>
<tr>
<td>• Heart Rate</td>
</tr>
<tr>
<td>• Respiratory Rate</td>
</tr>
<tr>
<td>• Body temperature</td>
</tr>
<tr>
<td>• Pulse oximetry</td>
</tr>
<tr>
<td>• Inhaled oxygen concentration</td>
</tr>
<tr>
<td>• BMI percentile per age and sex for youth 2-20</td>
</tr>
<tr>
<td>• Weights for age per length and sex</td>
</tr>
<tr>
<td>• Occipital-frontal circumference for children &lt; 3 years old</td>
</tr>
<tr>
<td>• Tests</td>
</tr>
<tr>
<td>• Values/Results</td>
</tr>
</tbody>
</table>
Definitions (Author / Performer)

- **Author:**
  - **CDA:** Represents the humans and/or machines that authored the [document/section/entry/act].
  - **Companion Guide:** An author represents the human or machine that authored content.
  - **FHIR Data Provenance:** A party that originates the resource and therefore has responsibility for the information given in the resource and ownership of resource.

- **Performer:**
  - **CDA:** A person who actually and principally carries out an action.
  - **Companion Guide:** A performer participant represents a clinician who actually and principally carried out a service.
  - **FHIR Data Provenance:** A person, animal, organization or device that who actually and principally carries out the activity.
Definitions (Participant / Informant)

- **Informant:**
  - **CDA:** An informant (or source of information) is a person that provides relevant information, such as the parent of a comatose patient who describes the patient's behavior prior to the onset of coma.
  - **Companion Guide:** *Not directly covered*
  - **FHIR Data Provenance:** A person who reported information that contributed to the resource

- **Participant:**
  - **CDA:** Used to represent other participants not explicitly mentioned by other classes, that were somehow involved in the documented acts
  - **Companion Guide:** *Not directly covered*
  - **FHIR Data Provenance:** *Not available, although additional participant types in FHIR*
CDA Base Schema for Participants

- CDA allows all four participation elements in the CDA base schema for:
  - Act
  - Encounter
  - Observation
  - Organizer
  - Procedure
  - SubstanceAdministration

- Order is performer, author, informant, participant
### Entries in Each Clinical Domain

| Entries in Each Clinical Domain | Performer | Author | Informant | Participant |
|--------------------------------|
| **Allergies**                  | Who diagnosed | Who originates the record | Other information source (e.g. patient or guardian) | The allergen |
| **Encounters**                 | Who performs | Who originates the record | Other information source (e.g. patient or guardian) | Where performed |
| **Medications**                | Who administers, Who prescribes | Who originates the record | Other information source (e.g. patient or guardian) | The drug vehicle (e.g. in saline) |
| **Payers**                     | Payer, or Guarantor | Who originates the record | Other information source (e.g. patient or guardian) | Member, patient or subscriber |
| **Planned Activity or Observation** | Who plans to perform | Who originates the record | Other information source (e.g. patient or guardian) | |
| **Problems**                  | Who diagnosed | Who originates the record | Other information source (e.g. patient or guardian) | |
| **Procedures**                | Who performs (e.g. surgeon) | Who originates the record | Other information source (e.g. patient or guardian) | Device & where performed |
| **Results**                   | Who performs (e.g. lab or imaging center) | Who originates the record, or Who provides interpretation/reading | Other information source (e.g. patient or guardian) | |
| **Vital Signs**               | Who performs (e.g. nurse or clinician) | Who originates the record | Other information source (e.g. patient or guardian) | |

Example 1:设备及地点

Example 2:地点

Example 3:设备及地点

Example 4:设备及地点
Example 1

- Patient Johnny Accident is seen for the first time by Dr. Ed Emergency for fainting in the ER. That doctor finds external documentation that Dr. Mary Primary diagnosed Johnny with diabetes last year. For the diabetes diagnosis:
  - Who is the author for the diagnosis?
  - Who is the performer for the diagnosis?
  - What times go in act & observation effectiveTime?
  - What times go author and performer time?
Diagnosis Made by Another Provider

<entry>
  <act>
    ...other elements not shown...
    <effectiveTime>
      <low value="20201021173502-0500"/>
    ...
    <entryRelationship>
      ...other elements not shown...
    <observation>
      ...other elements not shown...
    <effectiveTime>
      <low value="20190801"/>
    ...
    <performer>
      ...other elements not shown...
    <time value="20190827120535-0500">
    ...
    ...
  ...
  ...
  ...


Date when first documented locally

Date of biological onset

Dr. Mary Primary (when diagnosed)

Dr. Ed Emergency (when recorded)
Example 2

- Patient Johnny Accident is seen for the first time by Dr. Ed Emergency for fainting in the ER. That doctor finds external documentation that Dr. Mary Primary prescribed insulin for Johnny last year. For the insulin medication entry:
  - Who is the author for the medication?
  - Who is the performer for the medication?
  - What times go author and performer times?
Medication Prescribed by Another Provider

<entry>
  <substanceAdministration moodCode="INT">
    ...other elements not shown...
  </substanceAdministration>
  <effectiveTime>
    <low value="20191215"/>
    ...other elements not shown...
  </effectiveTime>
  <performer>
    ...other elements not shown...
    <time value="20191212123222-0500">
    ...other elements not shown...
  </performer>
  <author>
    ...other elements not shown...
    <time value="20201021173502-0500">
    ...other elements not shown...
  </author>

Time of the medication was started

Dr. Mary Primary (when prescribed)
Since the moodCode is INT, the performer is prescriber

Dr. Ed Emergency (when recorded)

Example 3

- A physician’s assistant, **Paul Assistant, PA** measures the blood pressure for the patient which is entered in the EHR by **Dr. Ed Emergency**. For the blood pressure:
  - Who is the author for the vital sign?
  - Who is the performer for the vital sign?
  - What would happen if information was provided by a patient, guardian or caregiver?
A Vital Sign Recorded by Another Provider

<entry>
<organizer>
...other elements not shown...
<effectiveTime value="20201021173502-0500">
...other elements not shown...
</effectiveTime>

<performer>
...other elements not shown...
<name><given>Paul</given><family>Assistant</family>
...other elements not shown...
</performer>

<author>
...other elements not shown...
<name><given>Ed</given><family>Emergency</family>
...other elements not shown...
</author>

<component>
<observation>
...other elements not shown...
<effectiveTime>
<low value="20201021173502-0500"/>
...other elements not shown...
</effectiveTime>
</observation>
</component>

Paul Assistant, PA

Dr. Ed Emergency


Time of biological observation
Example 4

- Patient Johnny Accident is seen for the first time by Dr. Ed Emergency for fainting in the ER. The doctor orders a metabolic panel for which blood is drawn today. The lab is completed by High Quality Labs tomorrow
  - Who is the author of the order?
  - How to show when ordered?
  - Who is the performer for lab (once performed)?
  - How is the reporting time recorded?
  - How to link completed result to order?
A Lab Order Performed by External Lab

Ordered Lab (Planned Observation)

<entry>
  <observation moodCode="RQO">
    <id root="69bed2f1-5e2c..." />
    <effectiveTime value="20201022" />
    <author />
    <time value="20201021173502-0500" />
  </observation>
</entry>

Completed Lab (Result Observation)

<entry>
  <organizer />
  <performer>
    <time value="20201022052133-0500" />
    <name>High Quality Labs</name>
  </performer>
  <component>
    <observation>
      <effectiveTime value="20201021182111-0500" />
    </observation>
  </component>
</entry>

The time the order was placed

The time the blood was collected

Time lab was resulted

Lab performing results & time

Dr. Ed Emergency

Full Samples: https://github.com/jddamore/HL7-Task-Force-Examples/tree/master/C-CDAR2.1/RESULT_order_and_performer
Onset date of diabetes: Patient diagnosed with diabetes by performer

Diabetes recorded with ER visit: Author

PCP prescribes insulin: Performer

Insulin recorded with ER visit: Author

Summer 2019: Perform & Record Blood Pressure

Winter 2019:

Today Oct 21:
Metabolic Panel Ordered: Author

Tomorrow Oct 22:
Lab Resulted: Author & Performer
Points for Discussion

▪ Authors record the last hop. Authors from prior hops can also be included but not required from data provenance perspective.*
▪ Authors are permanent for that “record” or “resource” but may not be maintained as information flows into other systems
▪ Performers are permanent more generically (excepting corrections)
▪ Performers may be the earliest author in some contexts
▪ Patient generated content means the patient is the “author.” Use “informant” when information comes from another source but then entered in legal record

* This is my opinion and not necessarily endorsed by HL7, ONC or anyone else! Use at your own risk ☺
Next Steps

- Post sectional guidance

- Bring examples for approval
  - Medication changed to order ("INT") to convey performer as prescriber
  - Add comments to results that performer can be in both places