Standards Insight

An Analysis of Health Information

Standards Development Initiatives

December 2003

The Continuity of Care Record Standard Initiative

The Continuity of Care Record (CCR) is a proposed standard for exchanging basic patient data between one care provider and another to enable this next provider to have ready access to relevant patient information. The standard is proposed by the E31 Committee on Healthcare Informatics of ASTM, an American National Standards Institute (ANSI) standard development organization.

The CCR is technology-neutral and vendor-neutral. However, it is offered as an XML platform that can stand-alone or can be transformed into the Health Level Seven (HL7) Clinical Document Architecture (CDA).

Although the CCR can be used without interfacing to an electronic health record (EHR) on either the sender or receiver side, a compliant EHR or other clinical documentation system should be able to both import and export CCR data. The CCR could also be printed out as a paper form, sent as a pdf file or viewed directly in a XML enabled browser.

The CCR is generally intended for provider-to-provider communication between any care settings. Conceptually, it would be "triggered" by a patient referral or a transfer to another provider. However, the CCR could also be sent to the patient, e.g., at the

conclusion of an episode of care, and to their personal health record. The base CCR has a minimal data set, with the majority of data elements designated as optional. As it is being introduced, it would be the responsibility of the sending provider to decide what patient information is deemed necessary for the next provider. In the future, other interested parties might specify required data elements to meet their needs or use cases. Such future extensions to the core CCR could be defined by different medical specialties, individual institutions and their trading partners, health plans and payers (claims attachments) and other secondary users.

The CCR is modeled on the real-world use case of the Patient Care Referral Form required by the Massachusetts Department of Public Health and other similar paper documents. It contains the following major data categories (some required and others optional):

- Document identifying information
- Patient identifying information
- Patient insurance/financial information
- Advance directives
- Patient health status
    - Diagnosis, problems and conditions
    - Family history
    - Social history and health risk factors
    - Adverse reactions/alerts
    - Current medications and relevant history
    - Immunizations
    - Vital signs and physiological measurements
    - Laboratory results
    - Procedures/imaging
    - Health status assessments
- Care documentation
- Care plan recommendation

ASTM E31 met on November 17 to gain consensus on its proposed standard with the intention of putting it out for committee ballot by mid-December.[1] As part of ANSI, ASTM must achieve consensus and resolve negative ballots.

In addition to ASTM, the CCR standard initiative is sponsored by the Massachusetts Medical Society, the American Academy of Family Physicians and the Healthcare Information and Management Systems Society (HIMSS).

Analysis of the CCR within the EHR World

If the CCR were simply an XML based "standard form" for sending optional data between care providers and supporting manual entry, paper printouts and browser viewing, it would not merit significant industry attention. It is, in fact, CCR's potential to interoperate between an EHR and other systems that makes it interesting.

Previously in *Standards Insight*, we described the different value propositions for primary and secondary uses of the EHR. We attributed the EHR value proposition to the depth of clinical function and interoperability particularly across provider organizational boundaries. The primary use of the EHR for direct patient care increases in value as it supports more effective and efficient care primarily within a single provider organization. Such value is based upon more than a passive electronic version of the paper record. It is created by enabling computer processing to maintain workflow, standard processes, reminders, alerts and decision support. The value of direct care is also increased when the EHR is shared among provider organizations. This circumstance is most often found with chronic disease management within the local care community. In *Standards Insight*, we also noted that the value of secondary uses such as clinical research or public health greatly increases as one collects EHR data from many providers. In all cases, the premise is that EHR systems must interoperate with other systems, providers and secondary users. This defines the need for the elusive interoperable EHR standard.

The CCR could address the need for cross-provider interoperability in an alternative way. Rather than making the sending and receiving EHR systems interoperable in all respects, the CCR could define the summary data each EHR must send or receive. In this approach, the CCR has the potential to simplify and accelerate patient data sharing between providers and possibly secondary users.

If one were to view the CCR as an abstract of an EHR[2], which would support interoperable exchange of patient data between EHR systems and not just a manual

[1] www.astm.org.

[2] The leadership of the CCR Workgroup (E31.28) has stated that the CCR is not a "mini-EHR." Rather, "it is a 'snapshot' of a patient at the time of a referral or a mini summary, with data pertinent for referral to another care provider or setting." It is not comprehensive or chronological. It is not a "progress note," consultation report or discharge summary. It contains information about labs, x-rays, medications, diagnoses, patient visits and brief care plans, only to the extent that each CCR author decides it is relevant. It does not mandate the use of standard vocabulary, coding or any medical nomenclature, even though the workgroup believes this should be strongly encouraged. The very flexible and non-prescriptive nature of the standard permits any end-user to determine its utility. Most of the clinical data elements may be left blank. Thus, some clinicians may choose to substitute the CCR in lieu of standard and more traditional clinical documents—for better or worse—depending on each individual use case.

document creation and use system, then one must evaluate it within the context of EHR interoperability standards. Data in an abstract is either defined by the data and context within the EHR, or the abstract itself defines what data and context the EHR must send and receive. Even if no data elements were mandatory, there must still be agreement on how to send optional data. By inspection, one can see that the CCR has optional (and repeatable) fields for almost anything of ongoing significance in the medical record. Thus, ultimately, the value of the CCR will be determined by how well it can interoperate with other clinical systems and their standards for vocabulary, messaging and documents. The potential for the CCR to interoperate with other systems depends upon adoption of the same or mappable data elements and coding, context, granularity, XML and processing rules.

As previously noted, ASTM E31 intends to ballot both the content and use standard and a technical implementation standard. To its credit, ASTM E31 is also working closely with HL7 to map its implementation into the HL7 Clinical Document Architecture. Recall that the CDA is a "document markup standard that specifies structure and semantics of clinical documents for the purpose of exchange."[3] The CDA is also XML-based and supports both computer processing—using other HL7 methods and standards—and human readability. Therefore, there will be two technical implementation standards of the CCR. ASTM E31 leadership believes that the industry needs the option now of a simple standard, which can be mapped to the CDA if users and the market so desire. Members of the CCR workgroup have been working with HL7 to include the CCR in the HL7-Integrating the Health Enterprise (IHE) interoperability demonstration at the 2004 Annual HIMSS Conference & Exhibition. If successful, it will demonstrate the current ability to map between the two XML implementations.

As it is now written, the CCR is a very good start on defining what patient data should be communicated between providers. Yet, there is more to be done to make it useable. There must be business rules for its use, e.g., trigger events, for meeting conditional minimal requirements (probably defined by the clinical nature of the referral that the receiving provider can depend upon), for maintaining or uncoupling data consistency and for meeting secondary users' needs. Providing the industry with a well-defined CCR standard at this "requirements" level will be a very valuable contribution as it shapes the content of the long-awaited EHR standard.

Please direct any questions, suggestions or comments regarding *Standards Insight* to Joyce Sensmeier, HIMSS director of professional services, at jsensmeier@himss.org or to its author, Ed Larsen at erlarsen@erlinc.com.

[3] HL7 Clinical Document Architecture, Release 2 Committee Ballot #2, December 8, 2003. Available through www.hl7.org.