

FAST15 by NEOTOOL

Interfacing insights in 15 minutes

**How do HL7 and XML message formats
work together to deliver clinical data?**

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Objective

HL7 v2.x is one of the several healthcare data standards. Some vendors may utilize XML standards such as ASTM's CCR or HL7's CDA for data exchanges with their applications.

This 15-minute session will summarize how HL7 and XML are used to share clinical data between systems.

Health Level 7 (HL7) v2

- Primarily Focused on delivery of data within a hospital environment
- Real-time delivery of clinical information based on events
- Interoperability of clinical applications
- Current state of patient
- Reduce duplicate data entry
- Reduce data errors

Two Types of v2 HL7 Message Formats

- HL7 2.X Schemas
 - HL7 Encoded Messages (Pipe (|) and Hat (^))
 - Used in almost all HL7 interfaces today
 - ‘Standard’ HL7 interface method
- HL7 2.XML Schemas
 - XML Schemas published by HL7 organization
 - Rarely used in the real world
 - Interfaces do exist

Continuity of Care Record (CCR)

- Standard specification developed jointly by...
 - American Society for Testing and Materials (ASTM) International
 - Massachusetts Medical Society (MMS)
 - Health Information Management and Systems Society (HIMSS)
 - American Academy of Family Physicians (AAFP)
 - American Academy of Pediatrics
- Concept started by physicians in Massachusetts

Purpose of the CCR

- Summary of a patients relevant medical history
- Allows a provider to pick-up care for a patient more easily
- Electronic format that can be transmitted between providers (e-mail, HL7, web services)
- XML format makes it both machine and human readable
- Not a real-time transfer of patient data
- Many EMR/EHR/PHR systems today can generate a CCR

Clinical Document Architecture (CDA)

- Started as the HL7 Care Record Summary (CRS)
- ANSI-approved HL7 standard since November of 2000
- Any kind of medical document (discharge summaries, progress notes, etc...)
- Can contain text, images, sounds or other multimedia content
- Delivered via HL7 or standalone

CDA (continued...)

- Part of HL7 version 3 family of standards
- Derives semantic content from HL7 Reference Information Model (RIM)
- Implemented in XML
- Different levels of complexity to implement, but powerful
- Used in Most Integrating the Healthcare Enterprise (IHE) Vendor Profiles
- CDA document is sent as 'payload' of HL7 v2 message

Continuity of Care Document (CCD)

CCR+CDA = CCD

- Collaborative effort between HL7 and ASTM
- Harmonization of CDA and CCR
- Endorsed by Healthcare Information Technology Standards Panel (HITSP)
- Used by Certification Commission for Healthcare Information Technology (CCHIT) as part of certification

Simple Application of CCR

- Patients spends half the year in one location and half the year in another (snowbirds)
- When moving from one location to another a CCR could be generated to update the primary physician

One-to-One Example



Patient



Clinic

- Receives their CCR on a USB drive
- Travels to another state for extended visit
- Provides new clinic with CCR electronic document

- Accepts CCR electronic document
- Imports CCR into medical record of patient



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CCR with HL7 v2 Interfacing

- Hospital already has HL7 v2 interfaces within their system
- Patient is admitted to a hospital
- Patient has a CCR/CDA/CCD that can be imported containing (allergies, meds, recent diagnosis, etc...)
- Document is imported, HIS system generates an HL7 v2 message containing an encoded document
- Delivery
 - HL7 v2 message (routed to compliant systems)
 - Individual Imports to each system that supports the document
- What about the other systems?

One-to-Many Example



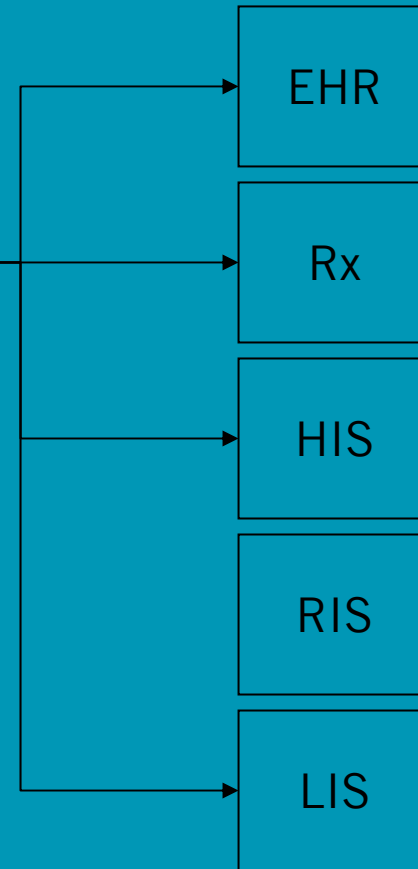
Patient



Hospital

- Patient referred to hospital or patient walks in
- Patient's CCR document is available electronically

- Imports CCR document
- Embeds CCR document in an HL7 v2 message
- Distributes patient information to relevant departments



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Proprietary XML

- Vendor or application specific
- Used in some point to point interfaces
- XML easier than HL7
- Many tools to parse and encode message data
- Don't want to re-write the interface
- Solution: perform mapping from custom XML to standard HL7 format using an interface engine or middleware

Summary

- HL7 2.X is the preferred method of transporting real-time clinical data
- New summary standards aimed at sharing relevant information about a patient
- New standards mostly XML based
- Not a replacement for HL7 real-time interfaces

Resources

- HL7 (HL7 encoded and XML Schemas)
 - <http://www.hl7.org>
- CCR
 - <http://www.astm.org>
 - <http://www.ccrstandard.com>
- CDA
 - <http://www.hl7.org/Special/committees/structure/index.cfm>
 - <http://www.hl7.org/documentcenter/public/faq/cda.cfm>
- CCD
 - <http://www.modernhealthcare.com/apps/pbcs.dll/article?AID=/20061205/FREE/61205010&SearchID=73265056231564>
 - <http://www.hl7.org>

Questions

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- HL7: First Steps
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- HL7: By the Book and Beyond
 - August 20-23
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