Continuity of Care Record (CCR) in Connected Healthcare Communities

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June 28, 2005
2:00 PM

This presentation will review how interoperability can be accomplished using the CCR within a hypothetical Connected Community.

- Healthvision overview
- "Stunning interoperability"
- CCR Prototype review
- Lessons learned to-date
- Next steps
Who is Healthvision?

> Healthvision creates truly connected healthcare communities by quickly and cost-effectively delivering the right patient-centric information via a web-based solution to consumers, patients, physicians, hospitals, payers and employers enhancing decision-making and effectiveness.

Healthvision Clinical Solution

- Clinician Desktop portal
- Secure Messaging
- Enterprise Patient Index (EPI)
- Clinical Results and Data
  - Demographics
  - Results
  - Transcriptions
- Ambulatory Clinicals
  - eRx, Allergies
  - Order Entry
  - Problem List
  - Superbill
  - Document signing
  - Referral Management
- Ambulatory Office
  - Billing
  - Scheduling
  - Charge Capture
**Healthvision Customers**

- Saint Luke's Health System
- MaineHealth
- Deaconess Billings Clinic
- Taconic IPA
- Yale New Haven Health
- DeKalb Medical Center
- Memorial Hermann
- Baylor Scott & White

**Healthvision Statistics**

- > 8 million longitudinal patient records
- > 4 million consumer users
- > 1.2 million electronic prescriptions / yr
- > 360,000 clinical transactions each day
- > 25,000 clinician users
- > 300+ Health Systems, 1,000 hospitals
- > Installed in over 25 communities
What is Stunning Interoperability?

> Interoperability is more than just data exchange
> Semantic knowledge based on standards
> Systems act in concert
> Anyone-can-play adaptability
> Knowledge organized for action

The Connected Healthcare Community

> Patient-centric design
> Disparate IT systems are unified through a shared information architecture
> Collaborative Care Model
> All providers have access to complete, up-to-date patient information
Vendor use of the CCR:
Why is the CCR so attractive?

> The CCR allows disparate information systems to read, interpret, and transmit a core summary of personal health information.
- It provides a minimum dataset of key clinical items that are important to communicate in an ambulatory setting
- Since it is represented in XML, it is easy to transport, parse, and render
- There is significant vendor enthusiasm for this emerging standard

> Healthvision already collects a large portion of the CCR content in a Patient Summary
- It is a relatively easy matter to convert into a CCR
**Healthvision Interoperability Prototype**

- A demonstration/proof-of-concept project to ...
- Implement HL7 transfer
- Implement CCR transfer
- Validate User Interface and workflow

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**Hypothetical Connected Community**

- Healthcare system comprised of
  - 3 hospitals, each with individual patient registration, clinical laboratory, and transcription/document systems
  - 2 Reference labs
  - Various physician practices with their own Physician Practice Management, and EMR systems
  - EMPI that resolves patient identities from disparate systems
  - Communication using standards - HL7, CCR
Prototype implementation

Prototype is an evolving work-in-progress that grows as standards evolve and change. Today it includes the following features:

> HIPAA compliant routing of HL7 information to EMR systems
  * HL7 messages are routed based upon physician/patient relationships
  * Messages are directed to EMR systems that need the information
  * Up-to-date demographics, labs, transcription data can be viewed in Healthvision portal or EMR system

> Bi-directional transmission of CCR Documents with any EMR on the network

> Support for IHE Technical Framework for document exchange

Prototype implementation

> Healthvision Clinician Desktop
  * Users are alerted about new CCR documents for their patients
  * Users can view and print accumulated CCR documents for a patient
  * CCR read/unread status is tracked, per user
  * CCR content includes data already in the patient’s record
    * Patient demographics, contact/guarantor, insurance
    * Problems
    * Procedures
    * Medications
    * Allergies (Alerts)
    * Results
    * Reports
  * CCR document can be printed for chart or patient use
  * CCR can be saved as XML for import into another EMR or PHR
Use Case: Intelligent Routing of HL7

> Step 1: All possible EMR systems used in the community are defined
> Step 2: Clinicians are associated with one or more EMR systems
> Step 3: HL7 Messages are examined to determine where they should be routed
  - Who is the patient?
  - Who are the patient's physicians?
  - What EMR do those physicians use?
> Step 4: Route HL7 message to EMR system(s)
Use Case: Healthvision receives a CCR

- A user in EMR System 1 completes the documentation of an encounter for patient Sally Smith.
- EMR System 1 automatically generates a CCR and sends it to Sally’s Primary Care Physician (PCP) who is a user of the Healthvision portal.
- The PCP logs in to the portal and receives an alert that there is new CCR information to review.
Use Case: Healthvision sends a CCR

> Sally Smith's PCP uses the Healthvision portal to document additional information. He adds several Problems, Allergies, and prescriptions to Sally's record.

> He notes that some recent lab results have arrived.

> The PCP decides to send Sally to Dr. Balas for a consultation. He sends Dr. Balas a CCR containing the labs, and recent additions to Sally's record.

> The PCP creates a CCR by selecting the desired elements to include, addresses the CCR, and transmits it.
Prototype "lessons learned to-date"

> Vocabulary and Coding
  - The CCR permits great flexibility in coding clinical data.
  - Free-text, ICD-9, CPT-4, NDC, LOINC, SNOMED, RxNorm are all used
  - Flexibility does not necessarily foster true interoperability
  - Trading partner negotiation is still necessary

> Identifiers
  - All participating systems must share common identifiers or at least know how to map them
    - i.e., Patients, insurance, language, gender, physicians, practices, facilities, information systems etc.
  - Trading partner negotiation is still necessary

> User intervention is required to create a CCR. Users must select specific items to include in a CCR, address it, and send it.
Prototype Next Steps...

> CCR Schema used is Oct 2004, from HIMSS Interoperability Showcase
  - Healthvision is eagerly awaiting the published ASTM CCR Standard
    later in 2005 so we can update code

> Integrate CCR-based data into the patient's record
  - File discrete Problems, Allergies, Medications, Results etc. so we
    can use them for decision support

> Enhance automatic workflow
  - Reduce the manual decision process "I want to send a CCR to..."
  - Tightly integrate into applications like encounter documentation or
    referral processing

> Use the CCR as an import mechanism
  - Create a CCR containing the last 30 days of patient data
  - Unambiguously import or export data into a patient's record

> Validate and refine the User Interface