HL7 and Meaningful Use

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HIMSS14
Many Types of Healthcare Information Need to be Exchanged

- Government Agencies, Public Health, Research
- Pharmacy Medication Lists
- Lab Test Results
- Hospitalization Summaries
- Payers / Financial Systems
- Home Health Monitoring Devices
- Doctors Orders and Clinicians Notes
- Medical Imaging Results
Need For Integrated Systems

Doctors need to be connected with each other – especially during transfer of care
Need For Integrated Systems

Hospitals need to be connected with each other – especially for medical record transfer
Need For Integrated Systems

Laboratories need to be connected to the patient’s electronic health record
Need For Integrated Systems

Doctors need to be connected to the patient’s personal health record
Healthcare IT Stakeholders

- Patients
- Consumers
- General Practitioners
- Specialists
- Outpatient Healthcare Providers
- Residential Care Providers
- Hospitals
- Healthcare Administration

- Pharmaceutical
- Payers, Insurance
- Employers
- Medical Equipment
- Review Boards
- Practice Guidelines
- Government Agencies
- Standards Enforcement Agencies
HL7 Mission - Interoperability Goals

- HL7's mission is to provide standards for interoperability that:
  - optimize workflow
  - reduce ambiguity
  - enhance knowledge transfer
  - improve care delivery
Healthcare Standards Improve Patient Care

Benefits of Standards:
increase efficiency,
improve quality,
lower cost,
and reduce risk

- Improve quality of care
- Electronic documents provide value to clinicians
- Ensure clinicians have latest knowledge
- Improve patient safety/Minimize preventable errors
- Improve clinical workflow
- Lower cost of healthcare delivery
- Supports lifetime electronic health record
- Eliminate duplicate medical tests
- Improve public health reporting
- Empower patient to manage their own health

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## Domains Covered in HL7 Standards

- Accounting & Billing
- Claims & Reimbursement
- Materials Management
- Patient Administration
- Personnel Management
- Scheduling
- Biorepositories
- Care Provision
- Clinical Decision Support
- Patient Documentation
- Clinical Genomics
- Diagnostic Imaging
- Nursing

- Immunization
- Laboratory
- Medical Records
- Medication
- Physician Order Entry
- Pharmacy
- Primary Care
- Public Health
- Regulated Products
- Regulated Studies
- Specialty Care
- Therapeutic Devices
- Mobile Health
HL7 Meaningful Use Standards

- Consolidated CDA
- S&I Framework Laboratory Result Interface
- Immunization Messaging
- Electronic Laboratory Reporting to Public Health
- Infobuttons for Clinical Decision Support
- Family Health History
- Quality Reporting Document Architecture
Interoperability Between Hospital-Based Outpatient Clinicians and External Laboratories

Annual savings of $31.8 billion at highest level of interoperability. In addition to reducing duplicate tests, it would –

1) reduce delays and costs associated with paper-based ordering and reporting of results,
2) provider-laboratory connectivity would give clinicians better access to patients’ longitudinal test results,
3) eliminate errors associated with reporting results orally,
4) optimize ordering patterns by making information on test costs readily available to clinicians, and
5) make testing more convenient for patients.

Walker, et al. The Value Of Health Care Information Exchange And Interoperability
Health Affairs Web Exclusive, January 19, 2005
Connectivity Between Office-Based Clinicians and External Radiology Centers

Annual savings of $26.2 billion at highest level of interoperability. In addition to reducing duplicate tests, it would –

1) save time and costs associated with paper- and film-based processes,
2) improve ordering by giving radiologists access to relevant clinical information, thereby enabling them to recommend optimal testing,
3) improve patient safety by alerting both the provider and the radiologist to test contraindications,
4) facilitate coordination of care and help prevent errors of omission by enabling automated reminders when follow-up studies are indicated, and
5) lessen adverse environmental impacts by reducing the use of chemicals and paper in film processing.

Interoperability Between Outpatient Providers and Pharmacies

Annual savings of $2.71 billion at highest level of interoperability. In addition to reducing the number of medication-related phone calls for both clinicians and pharmacists, it would –

1) improve clinical care by facilitating the formation of complete medication lists, thereby reducing duplicate therapy, drug interactions and other adverse drug events, and medication abuse,

2) enable automated refill alerts,

3) offer clinicians easy access to information about whether patients fill prescriptions,

4) complete insurance forms required for some medications,

5) help identify affected patients in the event of drug recalls, uncover new side effects, and improve formulary management.

Walker, et al. The Value Of Health Care Information Exchange And Interoperability
Health Affairs Web Exclusive, January 19, 2005
Provider to Provider Connectivity

Annual savings of $13.2 billion at highest level of interoperability. In addition to saving time associated with handling chart requests and referrals it would –

1) would reduce fragmentation of care from scattered records and improve referral processes.

Walker, et al. The Value Of Health Care Information Exchange And Interoperability
Health Affairs Web Exclusive, January 19, 2005
Use Case Medium-Size Hospital

The hospital (with 50–199 beds) would invest $2.7 million in clinical systems and interfaces to achieve the highest level of interoperability. After the first year, spending $250,000 per year to maintain those systems it would accrue benefits of $1.3 million annually, from

1) its transactions with other providers ($570,000),
2) laboratories ($200,000),
3) radiology centers ($170,000),
4) payers ($250,000), and
5) pharmacies ($70,000).

Walker, et al. The Value Of Health Care Information Exchange And Interoperability
Health Affairs Web Exclusive, January 19, 2005
HL7 Meaningful Use Standards

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  - Family Health History
  - Quality Reporting Document Architecture
CDA is the Basis For …

- Continuity of Care Document
- Consult Note
- Diagnostic Imaging Report
- Discharge Summary
- Healthcare-associated Infections, Public Health Case Reports
- History and Physical
- Operative Note
- Personal Health Monitoring
- Plan-2-Plan Personal Health Record
- Quality Reporting Document
- Unstructured Documents

- Emergency Care Summary
- Summary Documents Using HL7 CCD
- Patient Level Quality Data Document Using IHE Medical Summary (XDS-MS)
- Encounter Document constructs
- Consult and History & Physical Note Document
- Immunization Document
- Scanned document
- … and many more …
Clinical Document Architecture (CDA)

- Interoperability
  - An approved standard way to exchange dictated, scanned, or electronic reports on a patient between various health information technology systems and platforms
  - Human readable
    - The “paper world” of clinical documents, forms, etc.
  - Computer readable
    - XML representation of document data
    - EHR discrete data storage
    - Clinical decision support
What is a Continuity of Care Document?

- A medical summary representing the continuity of care record core data set covering one or more healthcare encounters.

- A snapshot in time for a patient, in CDA form, containing the pertinent:
  - clinical,
  - demographic, and
  - administrative data
CCD Required Sections

- **Conditions (Problems)**
  - active
  - resolved
  - chief complaint
  - reason for visit
  - diagnoses
    - admission
    - discharge
    - pre-operative
    - post-operative

- **Allergies and Intolerances**
  - pharmacy
  - dietary
  - general

- **Medications**
  - history
  - administered
  - discharge
  - current
CCD Optional Sections

- Advanced Directives
- Functional Status
- Procedures
- Encounters
- Family History
- Social History
- Immunizations
- Vital Signs
- Fetal Vital Signs
- Lab Results
- Plan of Care
Consolidated CDA

- The development of a single implementation guide that represents harmonization of Health Story guides, HITSP C32, part of the IHE Patient Care Coordination, and the original CCD by HL7

- 9 different types of commonly used CDA documents
  - Continuity of Care Document
  - Consultation Notes
  - Discharge Summary
  - Imaging Integration, and DICOM Diagnostic Imaging Reports
  - History and Physical
  - Operative Note
  - Progress Note
  - Procedure Note
  - Unstructured Documents
Consolidated CDA – Stage 2 Measure

- The EP, EH, or CAH that transitions or refers their patient to another setting of care or provider of care provides a summary of care record for more than 50% of transitions of care and referrals.

- More than 50% of all unique patients seen by the EP during the EHR reporting period are provided timely (within 4 business days after the information is available to the EP) online access to their health information subject to the EP's discretion to withhold certain information.
Consolidated CDA - Certification Criteria

- **Display.** EHR technology must be able to electronically display in human readable format the data included in transition of care/referral summaries received and formatted according to any of the following standards (and applicable implementation specifications) specified in: §170.205(a)(1), §170.205(a)(2), and §170.205(a)(3).
Consolidated CDA - Standards


- § 170.205(a)(2) – ASTM E2369 Standard Specification for Continuity of Care Record and Adjunct to ASTM E2369

HL7 Meaningful Use Standards

- Consolidated CDA
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Lab Result Interface - Stage 2 Measure

- More than 55% of all clinical lab tests results ordered by the EP or by authorized providers of the EH or CAH for patients admitted to its inpatient or emergency department (POS 21 or 23) during the EHR reporting period whose results are either in a positive/negative affirmation or numerical format are incorporated in CEHRT as structured data.

- Hospital labs send structured electronic clinical lab results to the ordering provider for more than 20% of electronic lab orders received.
Lab Result Interface - Certification Criteria

- Incorporate laboratory tests and values/results.
  (i) Receive results.
    (A) Ambulatory setting only.
      (1) Electronically receive and incorporate clinical laboratory tests and values/results in accordance with the standard specified in § 170.205(j) and, at a minimum, the version of the standard specified in § 170.207(c)(2).

- Inpatient setting only – transmission of electronic laboratory tests and values/results to ambulatory providers. EHR technology must be able to electronically create laboratory test reports for electronic transmission in accordance with the standard specified in § 170.205(j) and with laboratory tests expressed in accordance with, at a minimum, the version of the standard specified in § 170.207(c)(2).
Lab Result Interface - Standards

- § 170.205(j) – HL7 Version 2.5.1. Implementation Guide: S&I Framework Lab Results Interface

- § 170.207(c)(2) – LOINC® version 2.40, June 2012, a universal code system for identifying laboratory and clinical observations produced by the Regenstrief Institute
HL7 Meaningful Use Standards

- Consolidated CDA
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Immunization Messaging

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Immunization – Stage 2 Measure

- The EP, EH, or CAH who transitions their patient to another setting of care or provider of care or refers their patient to another provider of care provides a summary care record for each transition of care or referral.

- Successful ongoing submission of electronic immunization data from CEHRT to an immunization registry or immunization information system for the entire reporting period.
Transitions of care: (b)(2) – create and transmit transition of care/referral summaries.

(i) Create. Enable a user to electronically create a transition of care/referral summary formatted according to the standard adopted at § 170.205(a)(3) that includes, at a minimum, the Common MU Data Set** and the following data expressed, where applicable, according to the specified standard(s):

(B) Immunizations. The standard specified in § 170.207(e)(2);

Immunization information. Enable a user to electronically record, change, and access immunization information.

Transmission to immunization registries. EHR technology must be able to electronically create immunization information for electronic transmission in accordance with:

(i) The standard and applicable implementation specifications specified in § 170.205(e)(3); and

(ii) At a minimum, the version of the standard specified in § 170.207(e)(2).
Immunization Messaging - Standards


- § 170.205(e)(3) – HL7 2.5.1. \textit{Implementation specifications}: HL7 2.5.1 Implementation Guide for Immunization Messaging, Release 1.4
HL7 Meaningful Use Standards

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Lab Reporting to Public Health – Stage 2 Measure

- Successful ongoing submission of electronic syndromic surveillance data from CEHRT to a public health agency for the entire EHR reporting period.
Lab Reporting to Public Health – Certification Criteria

- **Transmission to public health agencies – syndromic surveillance.** EHR technology must be able to electronically create syndrome-based public health surveillance information for electronic transmission in accordance with:
  
  (i) **Ambulatory setting only.**
      
      (A) The standard specified in § 170.205(d)(2).
      
      (B) **Optional.** The standard (and applicable implementation specifications) specified in § 170.205(d)(3).
  
  (ii) **Inpatient setting only.** The standard (and applicable implantation specifications) specified in § 170.205(d)(3).

- **Inpatient setting only—transmission of reportable laboratory tests and values/results.** EHR technology must be able to electronically create reportable laboratory tests and values/results for electronic transmission in accordance with:
  
  (i) The standard (and applicable implementation specifications) specified in § 170.205(g); and
  
  (ii) At a minimum, the versions of the standards specified in § 170.207(a)(3) and (c)(2).
Lab Reporting to Public Health – Standards

- § 170.205(g) – HL7 2.5.1. *Implementation specifications*: HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm) with Errata and Clarifications, and ELR 2.5.1 Clarification Document for EHR Technology Certification.
HL7 Meaningful Use Standards

- Consolidated CDA
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- Immunization Messaging Using
- Electronic Laboratory Reporting to Public Health
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Clinical Decision Support – Stage 2 Measure

- Implement five clinical decision support interventions related to four or more clinical quality measures at a relevant point in patient care for the entire EHR reporting period.
(ii) Linked referential clinical decision support.

(A) EHR technology must be able to:

(1) Electronically identify for a user diagnostic and therapeutic reference information; or
(2) Electronically identify for a user diagnostic and therapeutic reference information in accordance with the standard specified at § 170.204(b) and the implementation specifications at § 170.204 (b)(1) or (2).
Clinical Decision Support - Standards

- § 170.204(b) – HL7 V3 Standard: Context-Aware Retrieval Application (Infobutton).

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Family Health History – Stage 2 Measure

- More than 20% of all unique patients seen by the EP or admitted to the EH’s or CAH's inpatient or emergency department (POS 21 or 23) during the EHR reporting period have a structured data entry for one or more first-degree relatives.
Enable a user to electronically record, change, and access a patient’s family health history according to:

- (i) At a minimum, the version of the standard specified in § 170.207(a)(3); or
- (ii) The standard specified in § 170.207(j)
Family Health History - Standards

- § 170.207(j) – HL7 Version 3 Standard: Clinical Genomics; Pedigree.

- **HL7 Version 3 Implementation Guide:**
  Family History/Pedigree Interoperability, Release 1
  January 2013
HL7 Meaningful Use Standards

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Quality Reporting – Stage 2 Measure

- In the 2014 Edition EHR certification criteria final rule, we adopted the QRDA III, Release 1, standard at 45 CFR 170.205(k) and incorporated the standard by reference at 45 CFR 170.299(f)(14). The QRDA III is included in the certification criterion at 45 CFR 170.314(c)(3), which requires EHR technology presented for certification to be capable of electronically creating a data file for transmission of clinical quality measurement data in accordance with QRDA III and that can be electronically accepted by CMS.
Quality Reporting – Certification Criteria

- EPs, EHs, and CAHs will electronically report their CQMs in the QRDA Category I format, which will be the basis for EHR-based reporting. They may also submit aggregate-level data in QRDA III format.

- EPs must report on 9 of the 64 approved CQMs

- Eligible Hospitals and CAHs must report on 16 of the 29 approved CQMs
Quality Reporting – Standards

Global Topics Covered in Training

1. Need To Send/Receive Which Artifact
   Exactly when are EHRs supposed to send this information?

2. A Valid Example of What You Are Expected To Send Or Receive—And Its Description
   Each section will walk-through an example artifact identifying its different parts and the content inside

3. How to Read and Understand the Meaningful Use Stage 2 Implementation Guides
   Go through the implementation guides that define the required artifacts and their major parts and constraints

4. The Vocabularies Needed
   Brief discussion will cover CVX, LOINC, SNOMED, etc.

5. Which HL7 Standards Do You Need To Know
   Brief discussion on the standards and how to learn more about them
HL7 High Level Goals

- Stimulate, encourage and facilitate domain experts from healthcare industry stakeholder organizations to participate in HL7 to develop healthcare information standards in their area of expertise

- Collaborate with healthcare information technology users to ensure that HL7 standards meet real-world requirements, and that appropriate standards development efforts are initiated by HL7 to meet emergent requirements
Standards Drive Increased Business for Healthcare IT Vendors and Service Providers

- Speed of development, faster time to market
- Lower development & installation costs, over customized interfaces
- Clients prefer the flexibility of products with standardized interfaces
- Enhanced interoperability of product
- Standards create best practices for the international community
- Bigger market beyond that for proprietary products
- More scalable solution
Working Group Meetings

Home
Cover Page

Resort Information
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Meeting Information
Key Information
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Activities
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Additional Information and Registration Coming!
Welcome to the HL7 Education Portal

The Education Portal aims to provide a gateway to training and education opportunities for the HL7 community. This dedicated space provides access to information about Professional Development and Certification Opportunities beneficial to Project/Product Managers, Implementers, Software Engineers, Clinicians and Business Analysts working in the HL7 space.

In addition, the portal links you to exam preparation materials and access to registration for any certification exams at locations around the world.

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HL7 and Meaningful Use

QUESTIONS