

**HEALTH
STORY**

PROJECT

**Ensuring Value in
the Electronic
Clinical Record**

Crystal Kallem,
Director of Business Analysis & Policy



HIMSS Health Story Project: **Ensuring Value in the Electronic Clinical Record**

Presented at AHIMA Convention & Exhibit

October 28, 2013

Atlanta, GA

About me

Crystal Kallem, RHIA, CPHQ

Director of Business Analysis & Policy

Lantana Consulting Group

- Project Director and/or Quality Advisor for Lantana Client Projects
- Leads Lantana's Policy Center of Excellence
- Lantana CDA Academy Faculty (www.cdaacademy.com)
- Co-chair, HL7 Clinical Quality Information Work Group

Ensuring Value in the Electronic Clinical Record

1. Challenge & Response
2. Background: 2006 to 2013
3. The “How”: Just enough about standards
4. Present & Future: Technology & **Policy**

Challenge

VIEWPOINT

Robert S. Foote, MD
Department of Nuclear
Cardiology, Dartmouth
Hitchcock Medical
Center, Lebanon, New
Hampshire., and
Department of
Medicine and
Radiology, Geisel
School of Medicine at
Dartmouth, Hanover,
New Hampshire.

The Challenge to the Medical Record

Observe, record, tabulate, communicate.

Sir William Osler

Thirty years ago, not long after I began teaching first- and second-year medical students how to take patient medical histories and perform physical examinations, it occurred to me that I was trying to teach them how to write. I came to see that taking a medical history, performing a physical examination, and writing a medical history like a student and using

JAMA, Internal Medicine, published online, May 27, 2013

uted have become more and more inscrutable, it has spawned a small army of people who “need” to know what happened in the examination room or at the bedside. They need to know because their livelihoods and the functioning of the system as a whole depend on it. This group includes administrators, policy makers, coders, support staff, information technologists, business groups, and government agencies, among many oth-

“I have never seen...a checkbox for apprehension...”

“The medical record is not data. It contains data... but it is not data, nor is it simply a repository into which data are poured.

“... [it is] information that has been transformed by the knowledge, skill, and experience of the physician...into an understanding of human experience...”

Data from clinical notes: a perspective on the tension between structure and flexible documentation

S Trent Rosenbloom, Joshua C Denny, Hua Xu, Nancy Lorenzi, William W Stead, Kevin B Johnson

JAMIA, published online, January 12, 2011

Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, Tennessee, USA

Correspondence to

Dr S Trent Rosenbloom, Eskind Biomedical Library, Room 440, 2209 Garland Avenue, Nashville, TN 37232-8340, USA; trent.rosenbloom@vanderbilt.edu

ABSTRACT

Clinical documentation is central to patient care. The success of electronic health record system adoption may depend on how well such systems support clinical documentation. A major challenge is integrating clinical documentation into electronic systems that can be used to generate reusable data. This paper discusses the need for an emphasis on deploying clinical documentation systems that support flexible documentation. Research

documentation (CBD) systems that promote real-time structured clinical documentation.

The myriad requirements imposed on clinical documentation compel healthcare providers to

Structured data capture can be at odds with the expressivity, workflow, and usability factors preferred by clinicians.

Authors recommend **choice** in data capture and text processing modalities.

Challenge

American College of Physicians, Board of Regents

- **Resolution Endorsing and Promoting a Method of Documentation to Improve Communications with the Electronic Medical Record**
- Spring, 2013, A resolution endorsing and promoting
 - EMR documentation “that emphasizes the thought process underlying decision making, patient complexity, and medical necessity ...
 - “with clarity and without requiring repetition of past notes, tests and extraneous data.”

American Medical Association Board Chair

- **HHS Should Address EHR Usability Issues Immediately**
- May 15, 2013, AMA Wire
 - Report on testimony noting that physician dissatisfaction with EHR systems has increased,
 - Urging greater flexibility in meaningful use while systems are improved.

Challenge

Struck, Rhonda, DNP, RN

- **Telling the patient's story with electronic health records**
- Nursing Management, July 2013
- Addresses
 - sense of loss of narrative in fragmented EHRs and
 - how to remediate via a comprehensive, cross-disciplinary patient portal.

Lawrence B. Marks, MD

- **Misperceptions on electronic health records**
- &Newsobserver.com, October 4, 2013
 - “During any evaluation, I like to scan the prior notes to remind myself of how the patient has been doing over the last few weeks. ...with a paper chart, ...it was almost like reading a short story.
 - “Imagine reading a short story and being allowed to view only one paragraph at a time. Imagine needing to open or close multiple windows to move in between paragraphs or needing to search to determine whether there is a prior paragraph to read.”

Challenge



A physician's practical need for fast and easy (30 sec) methods of creating clinical documentation

The enterprise need for structured and coded information capture to support meaningful use

Challenge & Response

- Can we create an electronic record that ensures value for
 - Care delivery
 - Evidence-based medicine
 - And which endures over time, as technology evolves?
- Most electronic patient records and health information exchanges operate on a small percentage of the available information.
- Vision
 - Comprehensive electronic records that
 - Tell a patient's complete health story.

Challenge & Response

- Use simple, stable, established formats for information exchange.
 - These exist, are inexpensive to implement, and
 - will lower the barriers to information sharing.
- Be more like the Web and less like a database.
- Open exchange networks to Big Data, incrementally structured.
- Benefits of this approach:
 - Less disruptive – adapts to wider range of technology, giving clinicians more choice in how they capture and communicate information.
 - More useful – the record is more complete, mitigating the distortion introduced by single-minded focus on structured data capture

Ensuring Value

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4. Present & Future: Technology & Policy

Background

- Non-profit, industry alliance
- Founded as “CDA for Common Document Types” (aka CDA4CDT) in 2006 by
 - M*Modal
 - Association for Healthcare Document Integrity (AHDI)
 - American Health Information Management Association (AHIMA)
 - Alschuler Associates (aka Lantana)
- Members provide direction, elect Executive Committee
- Supported development of eight (8!) implementation guides for common clinical documents within three years
- In 2013, affiliated with HIMSS as a HIMSS Roundtable

Project Members (pre-HIMSS)

Organization Affiliates



Promoters



Contributors

Canon U.S.A.

Participants

Apixio - BayScribe - ChartLogic
Emdat - Healthwise - InfraWare
Mediscribes - MedEDocs - MEDfx
Physicians Medical Group of Santa Cruz County
St. John's Regional Medical Center

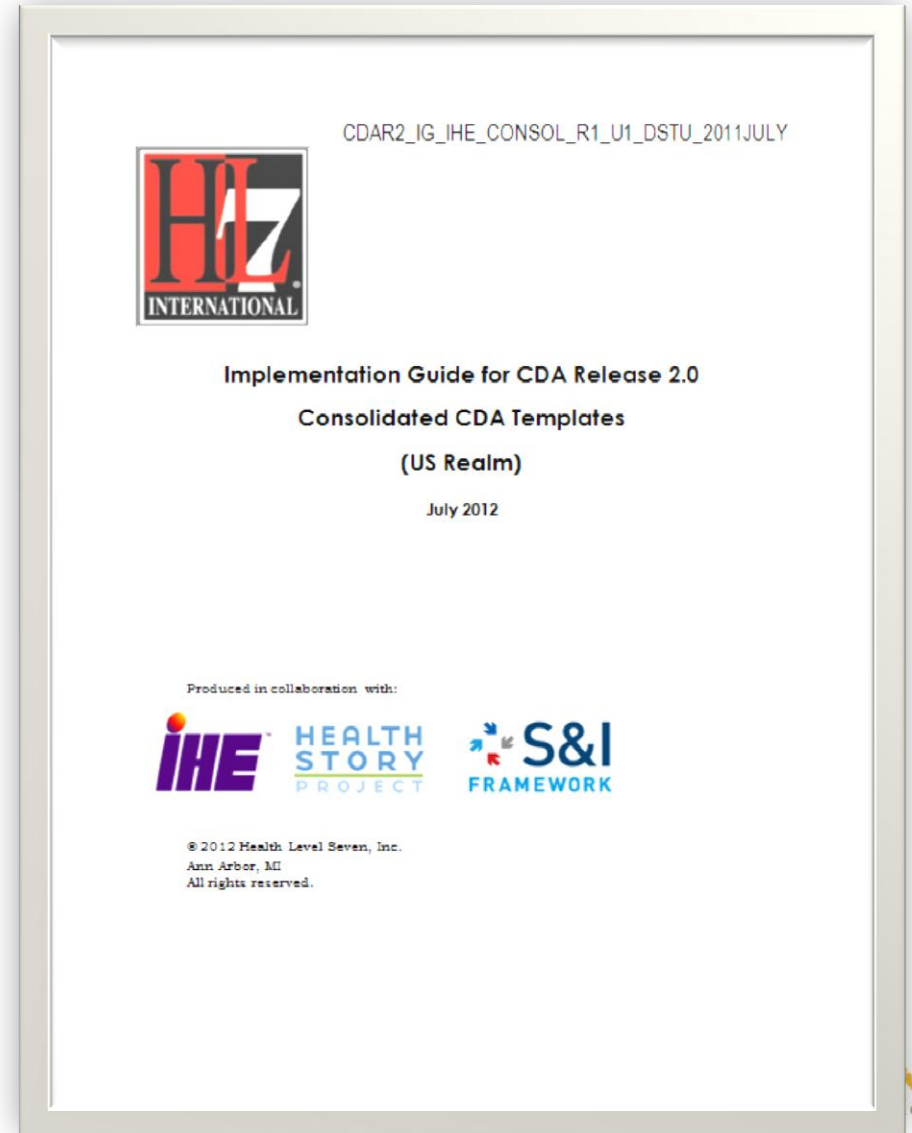
Background

- Associate Charter Agreement with HL7
 - Health Story convened stakeholders and supported specification development
 - Balloted through HL7 which retains ownership
- Initiated project to **consolidate** 8 guides into single guide and also
 - Update Continuity of Care Document (CCD)
 - Harmonize with Integrating the Healthcare Enterprise (IHE)
 - Integrate constraints from ONC's HITSP C32
 - Created Consolidated CDA (C-CDA) cited in MU2

Consolidated CDA

- CCD
- Consultation Note
- Diagnostic Imaging Report
- Discharge Summary
- H&P
- Operative Note
- Procedure Note
- Progress Note
- Unstructured Document

- Cited in Meaningful Use Stage 2
 - Except....



... *but*

- *Meaningful Use Stage 2 does not leverage the simple, low-end of the standard.*
- Instead,
 - it focuses exclusively on exchange of a narrow set of highly-structured data elements.
 - And it orphaned Unstructured Document
- How could this work if the *policy* were to change?
 - Stay tuned, but
 - first this word about ... CDA

Ensuring Value

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- HL7 Clinical Document Architecture
 - Release 1.0 2000; Release 2.0 2005
 - A specification for exchange of clinical documents, defining their structure and semantics
 - Abstract/generic specification covers all document/note/report types
 - ANSI standard developed by HL7's Structured Documents Work Group (SDWG)
- Widely implemented, internationally, as an ISO standard
- CDA R2 relies on
 - XML
 - HL7 Reference Information Model
 - Controlled vocabularies (SNOMED, LOINC, CIE-9, HL7, etc.)

The CDA Document Defined

- CDA Release 2, section 2.1
- A clinical document ... has the following characteristics
 - Persistence
 - Stewardship
 - Potential for authentication
 - Context
 - Wholeness
 - Human readability
- Therefore, CDA documents are not
 - Data fragments, unless signed
 - Birth-to-death aggregate records
 - Electronic health records

CDA Basics

- A Header + Body
- CDA Header:
 - Patient, provider, and encounter information
 - Metadata required to manage the document in any context
- CDA Body
 - Clinical report
 - Discharge summary, Progress note, History and physical (H&P)...
 - Healthcare Associated Infection (HAI) Report
 - Cancer Registry report
 - Quality report
 - Contains the report information in both
 - narrative (free-text) form **required** and
 - coded (computable) form **optional**

Investing in Information

- CDA can be simple
- CDA can be complex
- Simple encoding relatively inexpensive
- Complex encoding costs more
- You get what you pay for
 - like charging a battery,
 - the more detailed the encoding
 - the greater the potential for reuse

Good Health Clinic Consultation Note

File Edit View Go Bookmarks Tools H

file:///C:/

Subscribe with Blogli...

Good Health

Patient: Henry Levin , the 7th

Birthdate: September 24, 1932

Consultant: Robert Dolin , MD

History of Present Illness

Henry Levin, the 7th is a 67 year old male with a long history of asthma in his teens. He was hospitalized for asthma in his teens. He has been able to be weaned off steroid

Past Medical History

- Asthma
- Hypertension (see HTN.cda for details)
- Osteoarthritis, right knee

Medications

- Theodur 200mg BID
- Proventil inhaler 2puffs QID PRN
- Prednisone 20mg ad

```
C:\KEGVR2M1\CDA.ReleaseTwo.MembershipBallot01.Jan.2005\html\infrastructure\cda\SampleCDADocumen
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites
+ <custodian>
- <recordTarget>
- <patient>
  <id extension="12345" root="2.16.840.1.113883.3.933" />
- <patientPatient>
  - <name>
    <given>Henry</given>
    <family>Levin</family>
    <suffix>the 7th</suffix>
  </name>
  <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1" />
  <birthTime value="19320924" />
</patientPatient>
+ <providerOrganization>
</providerOrganization>
</patient>
</recordTarget>
+ <relatedDocument typeCode="R" />
+ <componentOf>
- <!--
*****
CDA Body
*****
-->
- <component>
- <structuredBody>
- <!--
*****
History of Present Illness section
*****
-->
- <component>
- <section>
  <code code="10164-2" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" />
  <title>History of Present Illness</title>
  - <text>
    - <content styleCode="Bold">
      Henry Levin, the 7
    </content>
  </text>
</section>
</component>
</structuredBody>
</component>
</relatedDocument>
</componentOf>
</-->
</-->
```

- Header
- Body
 - Readable: required
 - Computable: optional

Good Health Clinic Care Record Summary

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Recycle Bin Mail Print Word Pad Notepad

Address iora Alschuler\My Documents\KEG\CareRecordSummary\samples\CDAR2_LEVEL1_EXAMPLE.nonXML.1.xml Go

Patient: Ellen Ross
17 Daws Rd.
Blue Bell, MA 02368
HP: (781) 555-1212

MRN: 12345

Birthdate: January 27, 1960

Sex: Female

Consultant: Bernard Wiseman , Sr.

Created On: March 29, 200

Good Health Clinic Care Record Summary

Good Health Clinic Care Record Summa

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Recycle Bin Mail Print Word Pad Notepad

Address C:\Documents and Settings\Liora Alschu

To help protect your security, Internet Explorer b

Patient: Ellen Ross
17 Daws Rd.
Blue Bell, MA 02368
HP: (781) 555-1212

Birthdate: January 27, 1960

Consultant: Bernard Wiseman ,

Good Heal

Final Showing Markup Show

1 2 3 4 5

Advance Directives

Documentation	Contact	Effective Date	Comments
Live			e
Pov			
Att			
Org			Organ
Condition			
Act			

```
</performer>  
</serviceEvent>  
</documentationOf>  
- <component>  
- <nonXMLBody>  
- <text mediaType="text/rtf">  
  <reference value="Patient.rtf" />  
</text>  
</nonXMLBody>  
</component>  
</ClinicalDocument>
```


CDA Body: Machine Processible

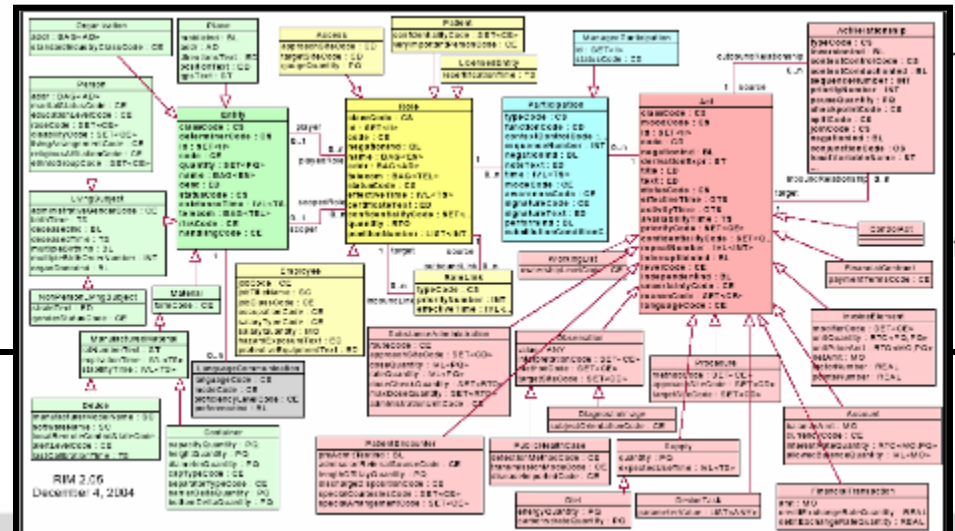
- Model-based computable semantics

- Observation
- Procedure
- Organizer
- Supply
- Encounter
- Substance Administration
- Observation Media
- Region Of Interest
- Act

```

<title>Past Medical History</title>
- <text>
- <list>
- <item>
  <content ID="a1">Asthma</content>
</item>
+ <item>
+ <item>
</list>
</text>
- <entry>
- <observation classCode="COND" moodCode="Optional"
  <code code="39154008"
  
```

Optional



- Meaningful Use...
- Healthcare Associated Infection (HAI) reporting to the National Healthcare Safety Network, Centers for Disease Control and Prevention
- Quality Reporting Document Architecture (QRDA)
- Patient Safety Common Format (AHRQ)
- Personal Health Monitoring (PHM), Continua Alliance
- CHNC Neonatal Care Report (Neonatal Care Report)
- New:
 - Clinical Oncology Patient Transfer Summary
 - Behavioral Health Assessment
 - HIV/AIDS Services Report
 - Privacy Consent Directives
 - Structured Form Definition Document
 - Transfer of Care, Referral Request and Report, Plan of Care

Ensuring Value

1. Challenge & Response
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3. The “How”: Just enough about standards
4. **Present & Future: Technology & Policy**

Investing in Information

- CDA can be simple
- CDA can be complex
- Simple encoding relatively inexpensive, complex encoding costs more
- **Gall's Law** is a rule of thumb from John Gall's *Systemantics: How Systems Really Work and How They Fail*:
 - A complex system that works is invariably found to have evolved from a simple system that worked.
 - The inverse proposition also appears to be true: A complex system designed from scratch never works and cannot be made to work. You have to start over, beginning with a working simple system.

There is Structure in Dictated Notes

Discharge Summary	
Patient	Ned Nuclear
Date of birth	Novemb
Contact info	6666 Ho Ann Arb Tel: (78
Document Id	999021
Document Created:	March 3
Author	Henry S
Contact info	1002 H Ann Arb Tel: (78

Hospital Course

The patient was admitted and ruled out for myocardial infarction on the Cardiolite scan. The report is not available at this time. The

Hospital Discharge Diagnosis

Unspecified chest pain

Hospital Discharge Medications

Medication
Lisinopril 5 mg
Atenolol 25 mg

1 Tablet once a day

I note that this patient has been on Prednisone for adrenal insufficiency in the past.

```

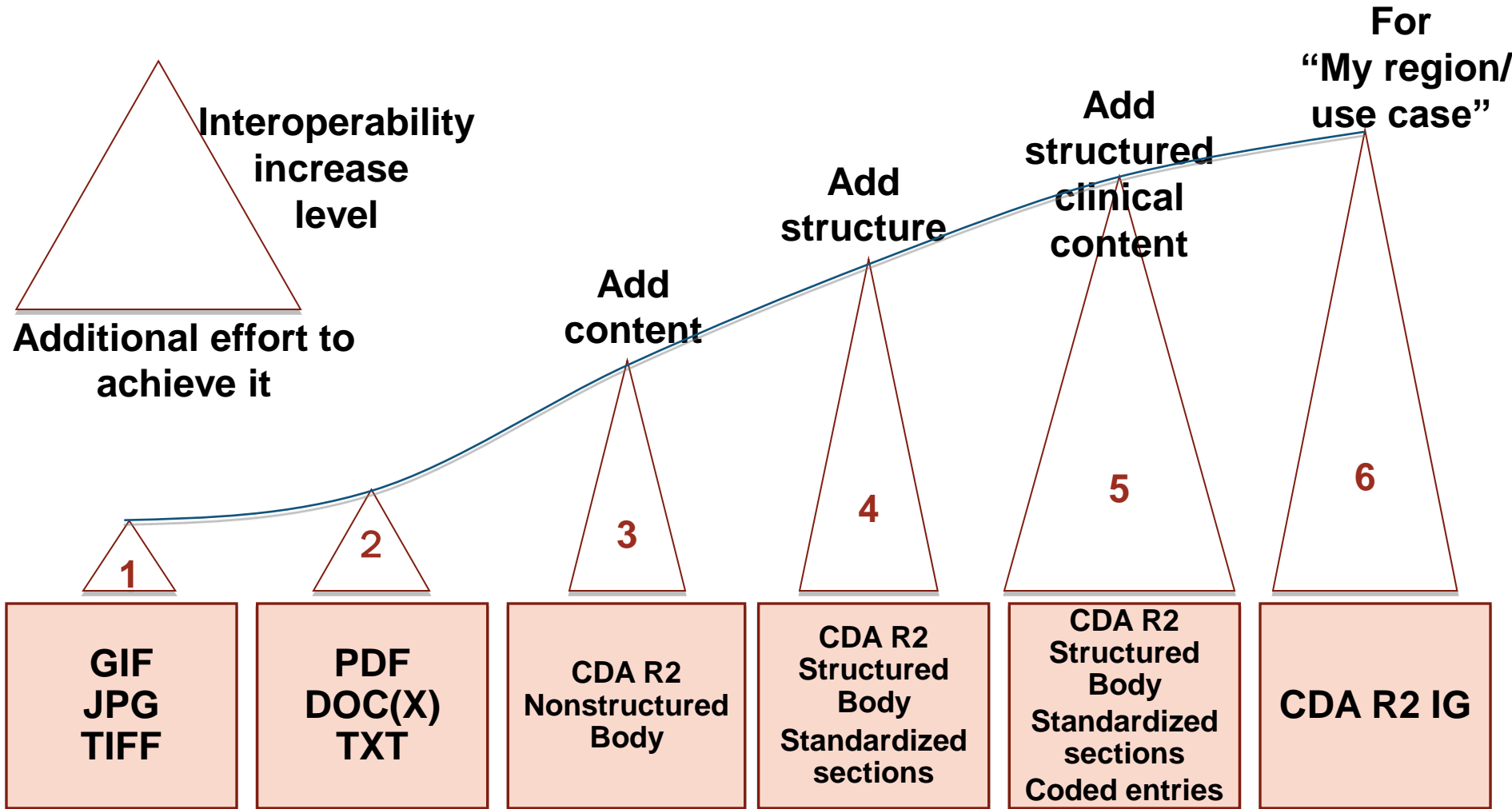
*****
Hospital Course - Required
*****
-->
<component>
- <section>
  <templateId root="1.3.6.1.4.1.19376.1.5.3.1.3.5" />
  <code code="8648-8" displayName="HOSPITAL COURSE"
    codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" />
  <title>Hospital Course</title>
  <text>The patient was admitted and started on Lovenox and
nitroglycerin paste. The patient had serial cardiac enzymes and
was ruled out for myocardial infarction. The patient underwent a
dual isotope stress test. There was no evidence of reversible
ischemia on the Cardiolite scan. The patient has been ambulated.
The patient had a Holter monitor placed but the report is not
available at this time. The patient has remained hemodynamically
stable. Will discharge.</text>
- <entry>
  - <observation classCode="OBS" moodCode="EVN">
    <code nullFlavor="NI" />
  
```

Creating Discrete Entries

- Methods for acquiring codes from notes:
 - Computer-assisted coding (CAC)
 - Natural language processing (NLP)
 - Data capture templates
 - Good old text processing and pattern matching
 - Mobile and smart phone technology

- → Applying standard HL7 CDA markup makes the discrete entries usable within an EHR and for the meaningful use program
- → Defining the target structure and entries makes NLP engines smarter

Evolutionary Semantic Interoperability with CDA R2



We are looking for a shift in policy

- Lower the threshold for information exchange so that
 - all may participate
 - approach 100% of the records for 100% of patients
- Incentivize participation
 - at all levels with
 - higher reward where there is higher potential to automate reuse.
- Recognize diversity of applications
 - EMR is not the proverbial hammer
 - need applications to originate, manage, code, and analyze
- Respect
 - the clinical thought process inherent in documentation
 - the need for data that is concise and relevant as well as coded
- Provide value back to those who incur the costs

We are looking for a shift in policy

- Approximately 1.2 billion narrative clinical documents are produced in the US each year.
- These documents comprise around 60% of clinical information captured in electronic health records.
- Thought processes are captured via physician narrative, never via checkboxes
- This tremendous source of valuable clinical information is completely underutilized
- Technologies are now available to make the unstructured clinical record accessible and actionable

We Have a Challenge



A physician's practical need for fast and easy (30 sec) methods of creating clinical documentation

The enterprise need for structured and coded information capture to support meaningful use

Incremental Approach

1. Get the data flowing, get the data flowing, get the data flowing.
2. Incrementally add structure, where cost effective to do so.

Quality Reporting

Decision Support

Clinical Applications

Meaningful Use!

DEB MEDQUEST HOSPITAL
DISCHARGE SUMMARY
PATIENT: DOGOOD, LARRY ADMITTED: 11/11/07
MR#: AL234567 DISCHARGE: 11/15/07
ACCOUNT #: 1234567

DISCHARGE MEDICATIONS:
1. ECASA 325 mg po daily (new)
2. Zocor 40mg po daily. (new)
3. Atenolol 100mg po daily (increased)
4. Glucophage 850 mg tab, 1 tab po TID
5. Zyrtec 10mg po daily

DISCHARGE DIAGNOSES:
1. Acute Myocardial Infarction s/p CABG.
2. Cardiovascular collapse
3. Hypertension, NOS
4. Diabetes Mellitus, type II
5. Seasonal Allergies

PROCEDURE: CABG, LIMA->LAD, SVG->Circ, SVG->LAD
2/26/07.

HISTORY OF PRESENT ILLNESS: This is a 51 year history of Hypertension and diabetes admitted for chest pain, and hypotension. Please see the H&A details of admission. He was noted to have non-Q wave and positive cardiac enzymes on presentation and admit to the U.

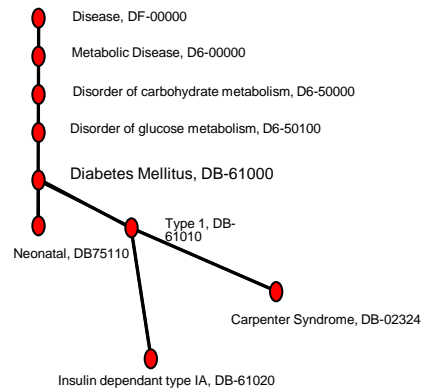
Narrative Text

Coded Discrete Data Elements

HL7 CDA Structured Documents

```
<!-- templateId root="1.3.6.1.4.1.11950.10" extension="DMEL_CDAR2_LVL01_3REF_DS_ID_2005SEP" -->  
<!-- component -->  
<componentOf>  
<!-- observing/Encounter classCode="OBSC" moodCode="EVN" -->  
<id root="1.3.6.1.4.1.11950.12" extension="99770120" -->  
<code code="99211" codeSystem="2.16.840.1.113883.6.12" codeSystemName="CPT-4" -->  
<displayName="Evaluation and Management" -->  
<!-- effectiveTime -->  
<low value="20070220T" -->  
<high value="20070220T" -->  
<!-- effectiveTime -->  
<dischargeDispositionCode code="DT" codeSystem="2.16.840.1.113883.6.2" codeSystemName="UB92" -->  
<displayName="Status Discharge" -->  
<!-- observing/Encounter -->  
</componentOf>  
</componentOf>  
<!-- component -->  
<componentOf>  
<!-- structure body -->  
<templateId root="1.3.6.1.4.1.11950.10" extension="DMEL_CDAR2_LVL01_3REF_DS_ID_2005SEP" -->  
<!-- component -->  
<!-- section -->  
<section>  
<!-- templateId root="1.3.6.1.4.1.119376.1.3.3.1.3.7" extension="HOSPITAL DISCHARGE DOC Template" -->  
<code code="11535-2" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" -->  
<displayName="HOSPITAL DISCHARGE DOC" -->  
<code code="DISCHARGE DIAGNOSES" codeSystem="2.16.840.1.113883.6.3" codeSystemName="SNOMED-CT" -->  
<!-- text -->  
<!-- paragraph 1 Acute Myocardial Infarction s/p CABG -->  
<!-- paragraph 2 Cardiovascular collapse -->
```

SNOMED CT



Value Statement

- A health record is the patient’s “health story”
 - shared by the patient and the circle of caregivers
 - sharing encompasses both access and authorship.
- The primary purpose of the record is to support care delivery
 - This, in turn, will support better health.
 - Secondary reuse should be supported.
- Electronic records must produce a longitudinal record of lasting value
 - expressing the thought processes behind the delivery of care,
 - preserving this for future readers.
- Clinical records must be complete, well organized, easy to navigate, concise, logical, adaptable to the needs of the user, sharable, and secure.
- Electronic records and new technologies
 - support shared decision-making,
 - document use of practice guidelines, and
 - support evidence-based practice.

Benefit

Value

Retains patient story

Maintains primary role of documentation to clearly describe and communicate what is going on with patient.

Preserves physician time for clinical care

Makes efficient use of physician time by enabling choice of documentation methods and fosters EMR acceptance

Supports meaningful use

Interoperability: implements HL7 CDA document standards for electronic exchange of clinical information – incrementally

Enables data reuse

Structured narrative enables better outcomes reporting, data mining, and decision support

Collaborative approach

Developed by broad array of providers, vendors and IT organizations; Balloted process through HL7 supports harmonization

Challenge



◀ Neil Versel, Contributing Writer

'Note bloat' putting patients at risk



G. Daniel Martich, MD

Jody Cervenak, principal of Pittsb

Cervenak quoted 17th Century F
longer than usual, only because I

Or, in the concise words of G. Da
Pittsburgh Medical Center, "More

'Every progress note shouldn't be a running blog'

SCOTTSDALE, AZ | October 10, 2013

Tweet 38 +1 3 Recommend 5 Share 13

Healthcare organizations with long-established electronic health records run the risk of "note bloat" and compromised patient safety unless they standardize physician documentation procedures and limit the amount of cutting-and-pasting doctors have to do, attendees of CHIME's Fall CIO Forum heard here at a session on Oct. 9.

"It's been challenging for docs and healthcare systems in general ... to produce a document that reflects the patient story in the most concise, complete and informational way," said

"It's been challenging for docs and healthcare systems in general ...to produce a document that reflects the patient story in the most concise, complete and informational way."

Jody Cervenak, Aspen Advisors

Challenge

VIEWPOINT

Robert S. Foote, MD
Department of Nuclear
Cardiology, Dartmouth
Hitchcock Medical
Center, Lebanon, New
Hampshire., and
Department of
Medicine and
Radiology, Geisel
School of Medicine at
Dartmouth, Hanover,
New Hampshire.

The Challenge to the Medical Record

Observe, record, tabulate, communicate.

Sir William Osler

Thirty years ago, not long after I began teaching first- and second-year medical students how to take patient medical histories and perform physical examinations, it occurred to me that I was trying to teach them how to write. I was forming like electronic studies and use

JAMA, Internal Medicine, published online, May 27, 2013

uted have become more and more inscrutable, it has spawned a small army of people who “need” to know what happened in the examination room or at the bedside. They need to know because their livelihoods and the functioning of the system as a whole depend on it. This group includes administrators, policy makers, coders, support staff, information technologists, business

“Data that have been copied and pasted into the medical record or inserted in a rapid series of mouse clicks has bypassed this critical transformative process...

“I fear that as it becomes more and more difficult to write like a clinician, sooner or later it will become more difficult to think like one.”

Learn More, Stay in Touch, & Get Involved

- Get on mailing list
- Attend weekly calls
- Get involved
 - Filling gaps in technical specs
 - Patient-originated notes
 - Diet & Nutrition
 - What else?
 - Recruitment campaign
 - HIMSS 2013 Showcase

Demonstrating
Consolidated CDA
on the floor at
HIMSS12 & 13

And soon, HIMSS14



Contact!

- <http://www.himss.org/health-story-project>
- Mission statement
- Value statement
- Bibliography
- Press release on HIMSS Health Story
- HIMSS Staff Support
 - Celina Roth
 - Manager, Staff Liaison to the Health Story Project
 - Phone: +1-312-915-9213
 - CRoth@himss.org