Interoperability: Practical, Affordable & Valuable

Presented by:

Lantana Consulting Group
Agenda

• Welcome
• Speaker Introductions
• Finding the Value in Interoperability
• Health Information Technology Standards
  – Clinical Documents
  – Quality Reporting
  – Next Generation
• Conclusion: Practical, Affordable, Valuable
• Q&A
Speakers

Liora Alschuler
Chief Executive Officer

Kanwarpreet Sethi
Senior Software Architect/Engineer

Rick Geimer
Chief Technology Officer
Finding the Value in Interoperability
Finding the Value?

- Perception: Poor interoperability a significant barrier (1)
  - Interoperability is a significant challenge for 95% of ACOs
  - At least 90 % cite the cost and lack of ROI of HIT as a key barrier to further implementation

- Thesis: Standards make information available
  - Within the enterprise – more broadly, efficiently
  - Across settings, now has business driver
How important are data standards to the success of value-based purchasing?

- Very Important (10)
- Somewhat Important (9)
- Neutral
- Somewhat Not Important
- Not at all Important

- Caveat: not the whole solution
Finding the Value

• Value-based purchasing (VBP)
  – From quantity to quality
  – From volume to value
  – ~11% of reimbursement & growing (3)
  – 75% of provider organizations participating (4)
  – ACA, ACO, PCMH, Medicare incentives, PfP, PfC

• Shared risk/reward (5)
  – 500 provider organization ($200M billing)
  – $9M in play, as shared risk/reward
  – ROI for population health management: 2:1 – 5:1
Information Standards

Information standards

• Content, not transport or application protocols
• That which needs to persist – the record of care delivery
• Related administrative data (coverage, claims)
• Required for care coordination; care coordination essential to success in meeting quality measures
• Information: data and narrative
Standards for Interoperability

• Focus on 3 standards from Health Level Seven:
  – Clinical Document Architecture (CDA)
  – Quality Reporting Document Architecture (QRDA)
  – Fast Healthcare Interoperable Resources (FHIR)
Standards for Clinical Documents
Clinical Documents

- Clinical Documents blend free form narrative and structured data elements (6)
  - represent the thought process, and
  - capture the clinical facts

- 7% structure required for “Meaningful Use” (7)
HL7 CDA Basics

- A Header + Body
- CDA Header: metadata
- CDA Body
  - narrative (free-text) form **required** and
  - coded (computable) form **optional**
- CDA Levels
  - More codes, higher level
  - Section codes (Level 2) achievable by dictation, sufficient context for NLP
  - Meaningful Use requires less than 20 coded data elements (Level 3)
Investing in Information

• CDA can be simple
• CDA can be complex
• Simple encoding relatively inexpensive, complex encoding costs more

Gall's Law (8)
• “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.
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!

SNOMED CT

- Disease, DF-00000
- Metabolic Disease, D6-00000
- Disorder of carbohydrate metabolism, D6-50000
- Disorder of glucose metabolism, D6-60100
- Diabetes Mellitus, DB-61000
- Neonatal, DB75110
- Type 1, DB-61010
- Carpenter Syndrome, DB-02324
- Insulin dependant type IA, DB-61020

HL7 CDA Structured Documents

Coded Discrete Data Elements

Narrative Text
Templated CDA

- Templates are semantic structures
- They reference value sets compiled from terminologies
- Templates are reused across implementation guides
Consolidated CDA (C-CDA)

- Release 1.1
  - Continuity of Care Document
  - Consultation Note
  - Diagnostic Imaging Report
  - Discharge Summary
  - History and Physical
  - Operative Note
  - Procedure Note
  - Progress Note
  - Unstructured Document

- Release 2 (Pending Final Publication)
  - Care Plan
  - Referral Note
  - Transfer Summary
  - Patient Generated Document
Current CDA Initiatives

• C-CDA: MU, Transitions of Care
• Quality Reporting Document Architecture (QRDA)
• Healthcare Associated Infection (HAI) reporting to the National Healthcare Safety Network, Centers for Disease Control and Prevention
• Patient Safety Common Format (AHRQ)
• Personal Health Monitoring (PHM), Continua Alliance
• ASCO Oncology Treatment Plan & Summaries
• HRSA HIV/AIDS Services Report
• Privacy Consent Directives
• Structured Form Definition Document
• Plus
  – profiles from Integrating the Healthcare Enterprise (IHE)
  – In use in Canada, European Union, Japan, China, Australia, New Zealand, So. America
Standards for Quality Reporting
Standards are a Prerequisite to Functionality

“If you cannot measure it, you cannot improve it.”

Lord Kelvin

“If you cannot standardize it, you cannot measure it.”

Lantana
Payers Weigh in on Standards

Should commercial payers and CMS adopt a single format (data standard) for electronic specification and submission of quality measurement data? (2)

- Yes (14)
- No
- Uncertain (5)
Standardization Across Healthcare

MU-certified EHR

Meaningful Use (MU) of EHR Data

- Clinical reuse
- Decision support
- Secondary use
- Quality reporting
Quality Reporting Process

1. **Patient data**
2. **eMeasure**
3. **Individual quality report(s)**
4. **Calculation engine**
5. **Aggregate quality report**

**Data capture** → **export** → **calculate** → **report**
Quality Reporting Process

Data capture

- Patient data
- Claims data
- Other data

Informs

- eMeasure
- Enterprise Health Data

Informs

- Analytics engine

Individual quality report(s)
Aggregate quality report

calculate

export/report
Quality Reporting Process

1. **Data capture**
   - Patient data
   - Claims data
   - Other data

2. **Analytics engine**
   - Enterprise Health Data

3. **eMeasure**
   - Informs

4. **Individual quality report(s)**
   - Aggregate quality report

5. **QRDA I**
   - QRDA III

What is QRDA?

Quality Document Reporting Architecture (QRDA) is a standard for reporting patient or aggregate quality data for one or more quality measures.

- QRDA Category I – Single patient Report
- **QRDA Category II - Patient List Report** *
- QRDA Category III - Aggregate Report

I and III are Draft Standards for Trial Use (DSTU)

* **II is not a DSTU**
QRDA is a CDA-based standard designed to have those data elements needed for quality measurement.

A CDA document using C-CDA templates

A QRDA document using C-CDA templates plus others
# QRDA I – Single Patient Report

## Contact info
- **Address:** 1020 Healthcare Drive, Burlington, MA 02156, US
- **Phone:** (555)555-1003

## Author
- **Name:** Good Health Report Generator

## Legal authenticator
- **Name:** Virgil Verify, MD of Good Health Hospital signed at December 31, 2011

## Document maintained by
- **Name:** Good Health Hospital

## Table of Contents
- Measure Section
- Reporting Parameters
- Patient Data

## Measure Section

<table>
<thead>
<tr>
<th>Measure Title</th>
<th>Version neutral identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>eMeasure Identifier (NAT)</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Asthma Care (CAC-1) Relievers for Inpatient Asthma</td>
<td>dc78ee5d-1c87-4d79-84c3-1df0f9781c</td>
<td>1</td>
<td>0143</td>
<td>93</td>
<td>8a492b2e-373f-82e2-0157-769e21cc5c8f</td>
</tr>
<tr>
<td>Children's Asthma Care (CAC-2) Systemic Corticosteroids for Inpatient Asthma</td>
<td>d77c7159-3591-457c-b8ea-774238c87248</td>
<td>1</td>
<td>0144</td>
<td>106</td>
<td>8a492b2e-373f-82e2-0157-baed84f58f93</td>
</tr>
</tbody>
</table>

## Reporting Parameters
- Reporting period: 01 Jan 2011 - 31 Dec 2011

## Patient Data

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Value</th>
<th>Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounter, Performed: Emergency Department Visit</td>
<td>Emergency Department Visit</td>
<td>03/01/2011 4:00 - 03/01/2011 8:30</td>
</tr>
<tr>
<td>Encounter, Performed: Encounter Inpatient</td>
<td>Hospital admission</td>
<td>03/01/2011 9:00 - 03/03/2011 10:30</td>
</tr>
<tr>
<td>Diagnosis, Active: Asthma</td>
<td>Asthma</td>
<td>01/01/2011</td>
</tr>
<tr>
<td>Medication, Administered not done: Patient refusal, Asthma Reliever: albuterol 1.25 MG (albuterol sulfate 1.5 MG) per 3 ML Inhale 2 Puffs</td>
<td>Drug declined by patient - reason unknown</td>
<td>Null</td>
</tr>
<tr>
<td>Medication, Administered: Systemic Corticosteroids</td>
<td>Hydrocortisone 10 MG Oral Tablet</td>
<td>03/01/2011 15:00</td>
</tr>
<tr>
<td>Patient Characteristic Clinical Trial Participant</td>
<td>True</td>
<td>03/01/2011</td>
</tr>
<tr>
<td>Patient Characteristic Payer</td>
<td>Medicare</td>
<td>03/01/2011</td>
</tr>
</tbody>
</table>
### Reporting Parameters
- Reporting period: 01 January 2012 - 31 March 2012
- First encounter: 05 January 2012
- Last encounter: 24 March 2012

### Measure Section

<table>
<thead>
<tr>
<th>eMeasure Title</th>
<th>Version neutral identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>eMeasure Identifier (MAT)</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticoagulation Therapy for Atrial Fibrillation/Flutter</td>
<td>03876d68-086b-415c-ae9d-9924171040c2</td>
<td>1</td>
<td>0436</td>
<td>71</td>
<td>8a44f2b0-5887-5df3-0139-013b007524e</td>
</tr>
</tbody>
</table>

Member of Measure Set: Clinical Quality Measure Set 2011-2012 - b6ac13e2-beb8-4e4f-94ed-fcc39f406cd8

- **Performance Rate:** 83% (Predicted = 62%)
- **Reporting Rate:** 84%
- **Initial Patient Population:** 1000
  - Male: 400
  - Female: 600
  - Not Hispanic or Latino: 350
  - Hispanic or Latino: 650
  - Black: 300
  - White: 350
  - Asian: 350
  - Payer - Medicare: 250
  - Payer - Medicaid: 550
  - Zipcode 92543: 15

- **Denominator:** 800
  - Male: 200
  - Female: 300
  - Not Hispanic or Latino: 175
  - Hispanic or Latino: 325
  - Black: 150
  - White: 175
  - Asian: 175
  - Payer - Medicare: 125
  - Payer - Medicaid: 275
  - Zipcode 92543: 15

- **Numerator:** 400 (predicted=300)
  - Male: 100
  - Female: 300
  - Not Hispanic or Latino: 140
  - Hispanic or Latino: 260
  - Black: 120
  - White: 140
  - Asian: 140
  - Payer - Medicare: 100
  - Payer - Medicaid: 220
  - Zipcode 92543: 6

- **Denominator Exclusions:** 20
  - Male: 0
Benefits and Conclusions

Monetary Savings

Reduce Processing Time: Providers Get Immediate Feedback

Faster Improvements in Care Quality

Learning Health System through Convergence

Kaiser study showed a 50% reduction in reporting cost using MU1 eMeasures (9)
FHIR Overview
FHIR

• F – Fast (to design and to implement)
  Relatively – there are no magic bullets

• H – Health
  That’s why we are here

• I – Interoperable
  Key to leveraging HIT

• R – Resources
  Building blocks – more on these to follow
• Recognition of the value of interoperability is increasing
  – Across organizations, disciplines, even borders
  – Regional and national programs
  – Mobile and cloud-based applications
  – Faster (integration in days or weeks, not months or years)

• Health information needs to be interoperable
  – CDA okay for documents; not everything is a document
  – HL7 V2 is around 25 years old; proprietary syntax
  – HL7 V3 messaging has not taken off
FHIR Manifesto

- Focus on **Implementers**.
- Leverage cross-industry web technologies.
- Target support for common scenarios.
- Require human-readability as base level of interoperability.
- Support multiple paradigms and architectures.
- Make content freely available.
- Demonstrate best practice governance.
FHIR is like Lego™ for Healthcare

- Resources = blocks
  - Discrete chunks of clinical information
  - Can be assembled into larger constructs

- You operate on resources via FHIR’s REST APIs.
  (Think programming Lego Mindstorms™)
Example Patient Resource

```xml
<Patient xmlns="http://hl7.org/fhir">
  <extension url="http://www.goodhealth.org/consent#trials">
    <valueCode value="renal"/>
  </extension>
  <text>
    <status value="generated"/>
    <div xmlns="http://www.w3.org/1999/xhtml">
      <p>Henry Levin the 7th</p>
      <p>MRN: 123456</p>
    </div>
  </text>
  <identifier>
    <use value="usual"/>
    <label value="MRN"/>
    <system value="http://www.goodhealth.org/identifiers/mrn"/>
    <value value="123456"/>
  </identifier>
  <name>
    <family value="Levin"/>
    <given value="Henry"/>
    <suffix value="The 7th"/>
  </name>
  <gender>
    <text value="Male"/>
  </gender>
  <birthDate value="1932-09-24"/>
  <managingOrganization>
    <reference value="Organization/2"/>
    <display value="Good Health Clinic"/>
  </managingOrganization>
  <active value="true"/>
</Patient>
```

Extension with reference to its definition

Human-readable Summary

Structured Data Content:
- MRN
- Name
- Gender
- Date of Birth
- Provider
CDA on FHIR

• New HL7 project
• Addresses the core principles of CDA using FHIR:
  – Persistence
  – Stewardship
  – Potential for authentication
  – Context
  – Wholeness
  – Human-readability
• Timeline:
  – Sept. 2014: Initial mapping and profiles for review
  – Jan. 2015: CDA on FHIR first draft
  – Spring 2015: Ballot with FHIR DSTU 2
CDA on FHIR

Will “CDA on FHIR” replace “CDA on HL7 V3”?

Provisional conclusions:

• No fundamental issues with the overall approach have been identified.
• Many minor issues existing in the current FHIR resources are being addressed.
• More work is needed to find the most effective way to bind narrative content with the associated machine-readable data contained in the document.
• FHIR resources need to be developed in several remaining subjects.
Internal applications

- FHIR works well as an “intermediate” format between proprietary data formats and standards like C-CDA and QRDA.
- Using it internally reduces external dependencies on a standard that is in flux.

Pilot exchanges between partners

- Small scale prototypes that “test the waters” and get data flowing.

Technology Demonstrations

- FHIR shows very well at trade shows, and the rapid development time associated with FHIR lends itself well to tight demo schedules.
- Examples: IHE Connectathon and HIMSS Showcase

Contributing to the Standard Itself

- FHIR is still in flux, and now is the time to get your use cases recognized and incorporated into the standard.
Conclusions
Practical, Affordable, Valuable?

• Standards are part of the value chain

• CDA
  – Can be foundational
  – Can be semi-structured, key elements coded

• QRDA
  – Can build on CDA templates
  – Can become foundational across programs

• FHIR
  – Can simplify implementation
  – Reasonable migration possible from current work
Practical, Affordable, Valuable?

• Information standards are not the full solution:
  – Identity management
  – Information governance
  – Adaptations in workflow
  – Business agreements

• Last words:
  – Look beyond the mandates.
  – Keep it simple.
Q&A

For more information about standards, interoperability or quality reporting, please contact us at info@lantanagroup.com
References


2. Survey of payer participants at first HL7 Payer Summit, Sept. 2014 (not published; available from Lantana)


5. Wellcentive on the goal of population health management: financial, clinical & human impact


8. Gall’s Law: John Gall’s Systemantics: How Systems Really Work and How They Fail:

greenCDA

What is it?

– An implementation methodology for generating templated CDA instances.
– A simplified XML Schema paired with a transform to normative CDA
– An 80% solution

What is it not?

– A replacement for normative CDA
The information in white contains the variable data for allergies. The rest (in yellow) is auto-generated by the transform.