Electronic Health Record (EHR) Data Capture: Hopes, Fears, and Dreams

Liora Alschuler, CEO
Lantana Consulting Group

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Tuesday, June 11, Session 2, Section C
A Little About Me & Lantana

Background:

- Electronic text systems analyst
- Helped introduce XML to healthcare IT (HIT)
- Co-editor of Health Level Seven (HL7) Clinical Document Architecture (CDA)

Lantana:

- Develops and implements standards-based solutions for healthcare
- Worked with NAACCR, NCI, ASCO, CMS, ONC
# A Little About T&FLAs

<table>
<thead>
<tr>
<th>NAACCR</th>
<th>You know that one</th>
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<tbody>
<tr>
<td>CDA</td>
<td>Clinical Document Architecture</td>
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<tr>
<td>MU</td>
<td>Meaningful Use (of Certified EHRs)</td>
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<tr>
<td>EHR</td>
<td>Electronic Health Record</td>
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<td>HL7</td>
<td>Health Level Seven</td>
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<td>ONC</td>
<td>Office of the National Coordinator for Health Information Technology</td>
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<td>HIT</td>
<td>Health Information Technology</td>
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<td>NCI</td>
<td>National Cancer Institute</td>
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<td>ASCO</td>
<td>American Society of Clinical Oncology</td>
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<td>CMS</td>
<td>Centers for Medicare &amp; Medicaid Services</td>
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<td>CDC</td>
<td>Centers for Disease Control &amp; Prevention</td>
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<td>NHSN</td>
<td>National Healthcare Safety Network</td>
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<tr>
<td>HAI</td>
<td>Healthcare Associated Infections</td>
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<tr>
<td>ACP</td>
<td>American College of Physicians</td>
</tr>
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<td>HITECH</td>
<td>Health Information Technology for Economic and Clinical Health Act of 2009</td>
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EHR Data Capture: Hopes

More data, better data, cheaper data

- Better care (process improvement)
- Better cures (outcomes improvement)
EHR Data Capture: Hopes

Meaningful Use:

- Certification criteria and interoperability standards
- For administrative and clinical data
- HITECH act incentive payments for adoption in inpatient, eligible provider outpatient settings; (excludes long term, specialty care)
- Supports all manner of reporting, analysis, decision making, improvement
EHR Data Capture: Fears

All programs:
- Have unintended consequences
- Can be disruptive of an already burdened care delivery system

Government programs:
- May not be cohesive
- May not be supported by vendors
EHR Data Capture: Fears

Unintended consequences:

- “The vast sum of stimulus money flowing into health information technology created a ‘race to adopt’ mentality – [buy today], but figure out how to make them work tomorrow.”
  - David Brailer, MD, First National Coordinator for Health IT, quoted in NY Times, January 10, 2013
EHR Data Capture: Fears

Failed promises:

- RAND Corporation in 2005 projected $81 billion *per year* in system savings from adoption of electronic records.

- In 2013 reassessment they state that “We’ve not achieved the productivity and quality benefits that are unquestionably there for the taking,”

  - Arthur L. Kellermann, MD, RAND, quoted in *NY Times*, January 10, 2013
EHR Data Capture: Fears

Uncertainty, doubt on rise:

- In ACP survey released March, 2013,
  - User satisfaction fell 12% from 2010-12
  - Very dissatisfied rose 10% from 2010-12
- Would not recommend: 39%
- Dissatisfied that can decrease workload: 34%
- Least satisfied: surgical specialists

ACPOnline.org, release March 5, 2013
EHR Data Capture: Fears

Even where in use, insufficient:

- Key clinical data required for quality reporting is missing from coded EHR data

- Example: Splenectomy documented only in narrative in 71% of records

- Example: Key data missing from 65% of coded records at IPA
  - Apixio White Paper: Big Data Reveals Crucial Hidden Information...
    http://apixio.com
EHR Data Capture:

Hopes

Fears

Dreams

How can we make it work?
Do we know where we are going?

“Would you tell me, please, which way I ought to go from here?”

“That depends a good deal on where you want to get to,” said the Cat.

“I don’t much care where—” said Alice.

“Then it doesn’t matter which way you go,” said the Cat.

“—so long as I get SOMEWHERE,” Alice added as an explanation.

“Oh, you’re sure to do that,” said the Cat, “if you only walk long enough.”
We Do Know the Destination

EHR data capture:
At the center of information-based healthcare
We *Do* Know the Destination

Potential for EHR data capture:

1. Use common framework; Expand and simplify interoperability
2. Start from where we are, improve incrementally

Two opportunities to adjust course:
- Consistent use of templated CDA
- & Big Data
CDA: Common Framework

HL7 Clinical Document Architecture, CDA, hits the “sweet spot”

- Specifies structure & semantics for exchange
- Complete object: text, data, media

Widely implemented

- No. & So. America, Europe, Asia, Middle East
- Cited in Meaningful Use for continuity of care, registry and quality reporting
CDA Developed to Meet this Challenge

Dictation is fast and practical

Structured, coded data is computable
CDA Sweet Spot

Templated CDA data

- Takes abstract, universal: <observation>
- Applies constraints: <diagnosis>

Retains narrative

- Health Story Project estimates 1,200,000,000 clinical documents created each year in US
- Represent 60% of clinical record
There is Structure in All Clinical Notes

Hospital Course - Required

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.

Hospital Discharge Diagnosis
Unspecified chest pain

Hospital Discharge Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisinopril 5 mg</td>
<td></td>
</tr>
<tr>
<td>Atenolol 25 mg</td>
<td>1 tablet once a day</td>
</tr>
</tbody>
</table>

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

Many types of documents:

- Continuity of Care (CCD)
- Consultation Note
- Diagnostic Imaging Report
- Discharge Summary
- History & Physical (H&P)
- Operative Note
- Procedure Note
- Progress Note
- Unstructured Document

A library of reusable templates (data elements)
Templated CDA Implementations

Consolidated CDA template library:

- Consolidate CDA: Nine common clinical documents, cited in MU2
- ASCO—Clinical Oncology Treatment Summary
- CDC National Healthcare Safety Network

Other Templated CDA libraries:

- CDA Guide for Reporting to Central Cancer Registries, cited in MU2
- NCI—for Breast Cancer Clinical Trial Data
Templated CDA: A Common Framework

Many different kinds of documents from a library of reusable templates

CDA Guide for Reporting to CCRs

CDA for HAI Reporting to NHSN

Common clinical document types

Continuity of Care Document (CCD)

Allergies
Demographics
Medications
Problems
Payer

Chief Complaint
Discharge
Transport Mode
Surgical Finding
Discharge Diet
New Template...

System for HAI Reporting:

- Launched in 2005 for HAI reporting
- In use by 30 states and by CMS
- State and federal reporting requirements
- 2005: ~300 hospitals
- 2013: over 5,000 hospitals
- Manual data entry via a web interface
electronic reporting via CDA
Web Interface for reporting is labor intensive.

Manual Methods:
- Case finding
- Data collection
- Data entry

Manual processes redundant when data are already in electronic form.
“Demonstrates that standards can be leveraged to reap new returns on investments in HIT.” Dan Pollock, MD
Big Data, Incrementally Structured

Supply analytic engines
- High volume
- Semi-structured data

Get the data flowing
Incrementalism Works for the Internet

Google
Narrative Rocks

Quality Reporting: 200,000 patients

- Coded data insufficient
- Narrative analysis shifted numerator and denominator significantly

NQF measure:

- Coded data: 22%
- Textual + coded data: 45%
- (study submitted for publication)

CDA preserves clinical narrative
1. Get the data flowing, get the data flowing, get the data flowing.

2. Incrementally add structure, where valuable to do so.

**Template CDA – Interoperability Roadmap**

- **Quality Reporting**
- **Decision Support**
- **Clinical Applications**
- **Meaningful Use!**

**Narrative Text**

**Coded Discrete Data Elements (via CDA templates)**

**SNOMED CT**
- Disease, DF-00000
- Metabolic Disease, D6-00000
- Disorder of carbohydrate metabolism, D6-50000
- Disorder of glucose metabolism, D6-50100
- Diabetes Mellitus, DB-61000
- Neonatal, DB-75110
- Type 1, DB-61010
- Carpenter Syndrome, DB-02324

**HL7 CDA Structured Documents**

**Legend**
- SNOMED CT
- Disease, DF-00000
- Metabolic Disease, D6-00000
- Disorder of carbohydrate metabolism, D6-50000
- Disorder of glucose metabolism, D6-50100
- Diabetes Mellitus, DB-61000
- Neonatal, DB-75110
- Type 1, DB-61010
- Carpenter Syndrome, DB-02324
EHR Data Capture: Yes, We Can

Hopes

Fears

Dreams

- We do have a roadmap
- We can reuse data now
- We can preserve and mine narrative
- We can work with existing workflow
Dreaming Big

Take small steps toward a common framework

Go for Big Data:
- Complete record
- Up to date
- Extensible
EHR Data Capture:

Liora Alschuler

- www.lantanagroup.com
- liora.alschuler@lantanagroup.com

Thank you!

And thanks to:

Dan A. Pollock, M.D.
Surveillance Branch Chief
Division of Healthcare Quality Promotion, CDC
dpollock@cdc.gov

Bob Dolin, M.D., FACP
President & CMO
Lantana Consulting Group
bob.dolin@lantanagroup.com