“Public Health and Support for Meaningful Use in Health Information Exchange”
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Conflict of Interest Disclosure
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Has no real or apparent conflicts of interest to report.
Session Objectives

• Identify the ways in which public health is positioned to participate in and assist health information exchange efforts based on the evolution of public health systems
• Identify specific public health goals and requirements in the CMS EHR Incentive Programs and how public health should successfully participate.
• Provide insight to help bridge the gap between public health and clinical IT perspectives
Notice of Proposed Rulemaking (NPR)

- Health Policy Outcome: Improve public health
- Three Stage 1 objectives:
  - Submit data to Immunization Registries (P, H)
  - Disease Surveillance: Transmit lab results (H)
  - Provide syndromic surveillance data (H, P)
- Proviso: “where required and accepted”
- Standards are well developed and harmonized for these transactions
  - HITSP IS02 (Biosurveillance)
  - HITSP IS10 (Immunization)
  - HITSP IS11 (PH Case Reporting)

“Mixed Bag” of Issues to Consider

- Stage 1 requirements somewhat meager, with a big “escape clause”
- Stage 2 (and 3) requirements likely to be more stringent, especially for data exchange
- No consistent tests for Stage 1 measures – NIST will likely stick to the “letter of the law”
- The immunization use case is a good one for HIE
- Public Health not yet utilizing document-center approaches (e.g., CCD)
Issues to Consider (continued)

- It may take an HIE several years to develop the capability to accept these transactions, so planning early is good
- Public health underfunded to make data exchange “accepted” in many agencies or to refocus data exchange to an HIE
- Federal agencies not consistently coordinating their funding, activities, requirements
- ONC State HIE Cooperative Agreements require this coordination
- Wide variety of organization in public health agencies making leverage of programs uneven

Evolution of Public Health Systems
Public Health Systems

- Began as program-specific, stovepipe systems, often PC-or mainframe-based
- Evolved into more robust specialized systems
- In some cases became integrated systems, either patient-centric or case-centric
- Eventually some applications aimed outside of the agency

Enterprise-wide Integration

- Participation by some programs may be mandated
- Usually voluntary by default
- Mandated in most instances
- ...but usually not across the board

Voluntary

Mandated

Centralized Model

Cooperative Model

De-centralized Model
From Integration to Interoperability

- To support outwardly-facing projects
- To assimilate into an emerging HIE-enabled world
- As a bi-product of ARRA/HITECH

HL7 Definition of Interoperability

- Technical Interoperability
  Structure, syntax, reliable communication
- Semantic Interoperability
  Full meaning preserved
- Process Interoperability
  Integral to (healthcare delivery) process, work flow

Source: HL7 EHR Interoperability Working Group “Coming to Terms” Working Paper developed in 2006
Technical Interoperability: System-to-system Messaging

- Public health systems have been engaged in data exchange for years (mostly to them)
- Though flat file formats still dominate, HL7 messaging is beginning to gain steam

Semantic Interoperability: VT Health Info Tech Plan

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMS Healthcare Common Procedure Code System (HCPCS)</td>
<td>This is the standard coding for procedures widely used in the healthcare community: Level I: Hospital Outpatient Procedures (CPT-4) Level II: Products, supplies and other services</td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention (CDC) Race and Ethnicity Code Sets</td>
<td>These code sets are based on current federal standards</td>
</tr>
<tr>
<td>College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT®)</td>
<td>This is the standard coding used for a wide variety of medical and health care terms</td>
</tr>
<tr>
<td>International Classification of Diseases, Ninth Edition, Clinical Modifications (ICD-9-CM)</td>
<td>This is the standard coding used for diagnoses and procedures by hospital: Volume 1: Hospital diagnoses Volume 2: Inpatient hospital procedures</td>
</tr>
<tr>
<td>International Classification of Diseases, 10th revision, Related Health Problems (ICD-10 CM)</td>
<td>This revision to ICD-9 CM contains a number of important improvements, this standard is not yet widely implemented</td>
</tr>
<tr>
<td>Logical Observation Identifiers Names and Codes (LOINC®)</td>
<td>This is the standard coding for laboratory and clinical observations used by health care systems and messaging (like HL7)</td>
</tr>
<tr>
<td>National Library of Medicine (NLM) Unified Medical Language System (UMLS) RxNorm</td>
<td>This is the standard for coding the names of drugs and dosing forms</td>
</tr>
<tr>
<td>National Drug Code (NDC)</td>
<td>This is a universal product identifier for human drugs</td>
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</tbody>
</table>
Process Interoperability: Immunization Management

Case Study: NYC MCI

- LeadQuest and CIR developed independently
- Integrated by sharing a Master Patient Index
- System evolved incrementally over 10+ years
Improvement in NYC

### TABLE 1: Number and percentage of matching results of the “initial load” data by system

<table>
<thead>
<tr>
<th>Within system</th>
<th>Between system</th>
<th>Within and between systems</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>CIR</td>
</tr>
<tr>
<td>Pre-MOI, N</td>
<td>2,426,369</td>
<td>2,194,216</td>
</tr>
<tr>
<td>Post-MOI, N</td>
<td>2,067,203</td>
<td>2,067,203</td>
</tr>
<tr>
<td>Matching, N</td>
<td>361,539</td>
<td>162,524</td>
</tr>
<tr>
<td>Matching, %</td>
<td>14.9</td>
<td>7.4</td>
</tr>
<tr>
<td>Human review, N</td>
<td>74,735</td>
<td>95,986</td>
</tr>
<tr>
<td>Human review, %</td>
<td>3.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>

*This number represents the sum of records in each data system after MOIs’ internal de-duplication, ie., 3,965,230 – 2,041,055 = 4,086,665
CIR = Citywide Immunization Registry; LG = Lead Out; MOI = Master Child Index


### TABLE 2: Number and percentage of Lead Quest records merged with Citywide Immunization Registry or vital records

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</tr>
</thead>
<tbody>
<tr>
<td>CIR</td>
<td>851,488*</td>
<td>1,235,734*</td>
<td>404,586*</td>
<td>80.0</td>
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<tr>
<td>LG</td>
<td>131,268</td>
<td>131,268</td>
<td>91,236</td>
<td>79.9</td>
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<tr>
<td>MOI</td>
<td>131,268</td>
<td>131,268</td>
<td>91,236</td>
<td>79.9</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td>131,268</td>
<td>131,268</td>
<td>91,236</td>
<td>79.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>merged with CIR records, %</td>
<td>100.0</td>
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</tbody>
</table>

CIR: From Integration to Interoperability

- Added HL7 v2 SOAP-based web services
- Allows standards-based submission of new immunizations and histories
- Allows access to immunization schedule through system-to-system query
- New functionality added
  - Without disruption to current operations
  - Compliant with national standards
  - Without re-architecting the entire system
What Can Public Health Contribute to an HIE/HIO?

- “Quick start” by leveraging existing activities, including interfaces to labs and providers
- Existing data, including consolidated data and population-based data
- Expertise: de-duplication, database management, web applications, data exchange including HL7
- Existing relationships with many relevant stakeholders: providers, hospitals, payers, professional associations
- Governance: experience in negotiating and implementing data sharing agreements
- Meaningful use: facilitate achievement
Benefits to Public Health of HIE/HIO Participation

• Many of public health’s data trading partners will choose to interoperate with an HIEN and reduce (or eliminate!) superfluous connections
• Public health can gain access to data and trading partners who previously might not have participated in its initiatives
• Better to be an insider than an outsider: Public health risks being left out as the medical community moves ahead

Risks to Public Health

• Public health applications targeted at these users may have slower uptake as organizations encourage (or require) users to stay with institutionally-supported applications
• Pressure will build for providers to interoperate solely through HIEs
• Public health systems run the risk of becoming focused as data repositories as users over time lose access to their distinctive features
• While many specialized features are part of the approved HL7 EHR FM specification they are often not yet required for CCHIT (or other) certification
Bridging the Interoperability Gap

- Public health world is largely data-centric and not document-centric
- EHR system world is becoming document-centric: public health systems need time to adjust
- Consider more advanced interoperability to leverage unique public health capabilities
Advanced Interoperability: Example

- Immunization Information Systems (IIS) serve a jurisdiction by providing a common repository for immunization information
- IIS provides specialized features not typically found in an EHR-S, like:
  - Recommendations of next immunizations due
  - Reminder and recall to ensure that patients return
  - Vaccine ordering and order processing
  - Practice-level assessment of up-to-date status

IIS – EHR-S Tension

Majority of Clinical Functionality
Record vaccination; view history
Algorithm, Reminder/Recall
Case Study

- KIDSNET, the integrated child health system in RI, did not have a robust immunization predictor algorithm
- Decided to use a version of the algorithm developed in another state (with permission)
- Deployed algorithm as a web service rather than absorbed into KIDSNET
- Other applications could now easily make use of the service

Case Study (continued)

- Web service is called in real time from KIDSNET application when needed.
- Core KIDSNET system interoperates with Web Immunization Service Evaluation and Recommendation (WISER) without issue.
Case Study (continued)

This future vision can co-exist with the previous model: Web service can interact with IIS and provider EHR systems.

Selected Readings

Selected Sources

- CCHIT: http://www.cchit.org/
- Connecting for Health (Markle Foundation): http://www.connectingforhealth.org/
- eHI: http://www.ehealthinitiative.org/
- HITSP: http://www.hitsp.org/
- HLN: http://www.hln.com/resources/
- NCPHI: http://www.cdc.gov/ncphi/
- ONC: http://www.hhs.gov/healthit/
- PDHSC: http://www.phdsc.org/
- PHII: http://www.phii.org/
- SLHIE: http://statehieresources.org/

Questions?

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