Transforming Health through a Digital Bridge

Presentation to the International Society for Disease Surveillance

Friday, July 20th, 2018
12:00-1:30 PM ET
What is Digital Bridge?

• A partnership of health care, health IT and public health organizations
  • Goal is to ensure our nation’s health through a bidirectional information flow between health care and public health
  • A forum for sharing ideas
  • An incubator for growing projects that meet this vision

• Funded by the Robert Wood Johnson Foundation and the de Beaumont Foundation. Program management provided by Deloitte Consulting and the Public Health Informatics Institute.

• Initial focus: electronic case reporting (eCR)
Governining Organizations

Funders

Project Management Office
Organizational Structure

DIGITAL BRIDGE GOVERNANCE BODY

Governance Chair
John Lumpkin, FAIF

Health Care Delivery Networks
- HealthPartners (Richard Faskar)
- Kaiser Permanente (Markku Suurku)
- Partners Healthcare (Michael Krumpe)

Health IT Vendors
- Epic (James Daley)
- Meditech (Joe Woln)
- Allscripts (Richard Miller)
- Cerner (Bob Harman)
- eClinicalWorks (Tushar Komotra)

Public Health
- APHL (Scott Becker)
- ACHS (Mary Ann O’Connell)
- CSTE (Kathy Turner)
- NACCHO (Oscar Alayza)
- CDC (Bill MacKenzie)

Ex Officio
- RWJF
- de Beaumont Foundation (Brian Castelleccio)
- PHII (Myra Singletary)
- Deloitte (Andy Wiesenthal)
- ONC (Don Chaput)
- CDC (Chesley Richards)

DIGITAL BRIDGE WORKGROUPS*

- eCR Implementation Workgroup
  - Workgroup Chair
  - Workgroup Co-Chairs
    - Health Care Delivery
    - Health IT Vendors
    - Public Health

- Evaluation Committee
  - Workgroup Chair
  - Workgroup Co-Chairs
    - Health Care Delivery
    - Health IT Vendors
    - Public Health

- Pilot Participation Workgroup
  - Workgroup Chair
  - Workgroup Co-Chairs
    - Health Care Delivery
    - Health IT Vendors
    - Public Health

- Legal & Regulatory Workgroup
  - Workgroup Chair
  - Workgroup Co-Chairs
    - Health Care Delivery
    - Health IT Vendors
    - Public Health

- Strategy Workgroup
  - Workgroup Chair
  - Workgroup Co-Chairs
    - Health Care Delivery
    - Health IT Vendors
    - Public Health

*Workgroups are charged by the governance body, lead by primary or alternate governance body representatives, with members that are appointed by governance body organizations.

 Legend:
- member with voting privilege
- active workgroup
- completed/inactive workgroup

Updated: July 19, 2018
Benefits to the Digital Bridge Approach

• A unified approach to information exchange eases the burden and costs for all stakeholder groups.

• Lays the foundation for greater bidirectional exchange. Clinicians will be easily informed about population health, environmental risks and outbreaks.

• Bidirectional data exchange can eventually encompass non-communicable diseases.
Electronic Case Reporting (eCR)
The automated generation and transmission of case reports from the electronic health record (EHR) to public health agencies for review and action.
How eCR Works

01 Provider Enters Information
Health care provider documents patient visit information into electronic health record as part of regular workflow.

02 Health Technology Sends Information
Criteria in electronic health records trigger an electronic initial case report (eICR) to automatically send.

03 Determine Reportability
Case report is validated and if reportable, is forwarded to the appropriate agency. Health care provider is notified if disease case is submitted.

04 Analysis and Evaluation
Public health professionals receive the disease case for analysis and evaluation.

05 Additional Feedback to Provider
The provider can choose to receive guidance on patient care and outbreak response from public health.
Value of Electronic Case Reporting (eCR)

- More complete, accurate data in real time for action
- Early detection of cases allows
  - Earlier intervention
  - Diminished transmission of disease
- Improves detection of outbreaks
- Responds directly to local and state partner needs
- Diminishes burden on health care provider to report
- Directly links health care to population health
Digital Bridge Approach for eCR

• An interoperable, scalable, and multi-jurisdictional approach to eCR.

• Not a new technology product. The Digital Bridge approach is based on existing eCR tools and standards, and seeks to support their development and adoption.

• eCR is incorporated into the EHR as a background operation requiring little or no effort on the part of the clinical end user.

• The approach will be tested with pilot implementation sites through 2018.

• The implementation sites’ technical solution will remain EHR vendor-agnostic so that any vendor can adopt the solution and pass on this functionality to their clients.
Technical and Legal Approach
Legal Approach

• In 2017, Digital Bridge engaged Davis Wright Tremaine (DWT) LLP with support from the Robert Wood Johnson Foundation.
  • Collective clients include
    • Association of Public Health Laboratories (APHL)
    • Robert Wood Johnson Foundation (RWJF)
    • Task Force for Global Health (TFGH) /Public Health Informatics Institute (PHII)
• DWT and their clients reached consensus that the DSI* acting as a business associate of the health care provider (or HIE) is appropriate for short- and medium-term eCR rollout (as of Jan. 4, 2018).

DSI* - decision support intermediary (AIMS platform hosted by APHL with RCKMS application supported by CSTE)
eCR Overview

1. Authoring - Public health agency loads its case reporting criteria into Decision Support Intermediary

2. Trigger criteria delivery - Decision Support Intermediary provides Health Care Providers with nationally consistent criteria for triggering potential cases.

3. Preliminary event identification - Potential cases detected using nationally consistent trigger criteria optimized for sensitivity.

4. Secondary event assessment - False positive cases filtered out by jurisdiction-specific public health reporting criteria optimized for specificity.

Legend
Black – technical
Blue- legal
Draft Legal Agreements

• Pilot participation agreement
  • Agreement between pilot health care provider or HIE (a participant) and APHL
  • Provides legal framework for pilot sites to enable transmission of protected health information to APHL, and, if elected, for APHL to transmit those data to public health authorities in accordance with applicable law on participant’s behalf
  • Makes explicit that pilot project only includes a subset of all reportable conditions

• Business associate agreement
  • Also an agreement between participant and APHL
  • Accounts for requirements as defined by HIPAA (e.g., permitted uses and disclosures, additional obligations of APHL, breach reporting, ownership of information)
Long-Term Strategy

During initial eCR implementations (aka “short-term”), Digital Bridge will also plan long-term strategies for legal and regulatory compliance:

• Increase acceptability among health care, governmental partners
• Increase scalability through reduction of point-to-point agreements
• Inform evolution of eCR technical architecture
• Will likely entail examining “trust networks,” e.g.:
  • Sequoia/eHealth Exchange (http://sequoiaproject.org/ehealth-exchange/)
  • DirectTrust (https://www.directtrust.org/)
Implementation and Evaluation
## eCR Site Participation

<table>
<thead>
<tr>
<th>Public Health Agency</th>
<th>Health Care Provider</th>
<th>EHR Vendor</th>
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<tbody>
<tr>
<td>California</td>
<td>UC Davis</td>
<td>Epic</td>
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<tr>
<td>Houston</td>
<td>Houston Methodist</td>
<td>Epic</td>
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<tr>
<td>Kansas</td>
<td>Lawrence Memorial Hospital</td>
<td>Cerner</td>
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<tr>
<td>Massachusetts</td>
<td>Partners HealthCare</td>
<td>Epic</td>
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<td>Michigan</td>
<td>Local Public Health Clinic</td>
<td>NetSmart/HIE-MiHIN</td>
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<td>New York City</td>
<td>Institute of Family Health</td>
<td>Epic</td>
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<tr>
<td>New York State</td>
<td>SUNY Health Science Center at Syracuse (Upstate)</td>
<td>Epic</td>
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<tr>
<td>Utah</td>
<td>Intermountain Healthcare</td>
<td>Cerner</td>
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</table>
Digital Bridge is implementing electronic case reporting across states and cities.
Site Participation

• Sites will support five conditions initially: chlamydia, gonorrhea, pertussis, salmonellosis, and Zika virus infection.

• Participating sites will participate in eCR evaluations.

• Any public health agency participating in eCR outside of Digital Bridge is encouraged to continue to do so.
## Current Site Status

<table>
<thead>
<tr>
<th>Activities</th>
<th>MI</th>
<th>UT</th>
<th>CA</th>
<th>KS</th>
<th>NYC</th>
<th>MA</th>
<th>NYS</th>
<th>HOU</th>
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<tbody>
<tr>
<td>Site Development Activities</td>
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<td>Onboarding</td>
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<td>End to End Testing</td>
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<td>Legal Readiness</td>
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- **Completed**
- **In Progress**
- **Not Started**
- **Not Currently Applicable**
Evaluation Highlights

• Mixed methods approach to data collection that includes key informant interviews and quantitative analysis

• Evaluation committee consists of members of the governance body or their appointees

• Evaluation committee participates in a collaborative process to:
  • Interpret findings and develop answers to the evaluation questions and reach overall conclusions
  • Identify and report on unintended or unexpected processes, outcomes and side effects of the eCR approach.

• Final deliverable to the Digital Bridge governance body is an evaluation report
Implementation Evaluation Goals

• Identify and describe the overall processes by which the sites initiated and implemented eCR and the various influencing factors
• Determine eCR functioning and performance
• Identify the resources needed to initiate and implement an eCR system
• Identify the potential value and benefits of eCR to stakeholders
Evaluation of Core Component of Digital Bridge eCR Approach

A. Trigger code alignment
   - Concepts represented in the health IT product are aligned and mapped as applicable to trigger codes

B. Application of trigger codes
   - Health IT product applies trigger codes and identifies events correctly

C. Creation of case report
   - Health IT product generates an electronic case report when activated by trigger code(s)

D. Reporting criteria analysis and authoring
   - Public health agency analyzes and authors reporting criteria to automate determination of both:
     1. Reportability
     2. Where to send a report

E. Adjudication using jurisdiction-specific rules
   - Decision support engine applies the jurisdictional-specific reporting rules to determine if the case report will be routed to a public health agency

F1. Consumption of electronic case report
   - Public health system automatically receives, consumes, and makes the case report and reportability response available for use

F2. Consumption of reportability response document
   - Health IT automatically receives, consumes, and makes the reportability response available for use

G1. Public health digital information exchange
   - Healthcare organization uses information from the document with reportability assessment, routing, and links to additional resources

G2. Healthcare digital information exchange
   - Public health uses information from the electronic case report and uses information from the document with the reportability assessment, routing, and links to additional resources

FOR DISCUSSION USE ONLY – March 1st, 2018
Digital Bridge at the Public Health Informatics Conference

• Atlanta, GA

• Reportable Conditions Knowledge Management System: Developing Quality Decision Support in the Data Supply Chain for Public Health Surveillance
  • Tuesday, August 21 10:30-12:00PM ET

• Digital Bridge in Action: Perspectives from eCR Pilot Sites
  • Tuesday, August 21 3:00-4:00PM ET

• Making the Electronic Case Reporting Connection: Implications for Data Quality
  • Wednesday, August 22 10:30-12:00PM ET

• Full agenda available at phiconference.org/
Stakeholder Participation and Resources

- We value the input of a diverse audience. Dialogue is encouraged with governance body representatives. Feedback and questions can also be sent to info@digitalbridge.us

- The Digital Bridge intends to be transparent. See www.digitalbridge.us for:
  - Workgroup updates, completed products and resources
  - Governance meeting notes and slides
  - Upcoming events and news
  - Mail list sign-up

Thank you!
Additional Slides for Reference
## Acronyms Used in this Presentation

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIMS</td>
<td>APHL Informatics Messaging Services Platform</td>
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<td>APHL</td>
<td>Association of Public Health Laboratories</td>
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<tr>
<td>MiHIN</td>
<td>Michigan Health Information Network Shared Services</td>
</tr>
<tr>
<td>CSTE</td>
<td>Council of State and Territorial Epidemiologists</td>
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<tr>
<td>PHII</td>
<td>Public Health Informatics Institute</td>
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<tr>
<td>DSI</td>
<td>Decision Support Intermediary</td>
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<tr>
<td>RCKMS</td>
<td>Reportable Conditions Knowledge Management System</td>
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<td>DWT</td>
<td>Davis Wright Tremaine, LLP</td>
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<td>RCTC</td>
<td>Reportable Conditions Trigger Codes</td>
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<td>EHR</td>
<td>Electronic Health Record</td>
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<td>RR</td>
<td>HL7 Reportability Response</td>
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<tr>
<td>eICR</td>
<td>HL7 Electronic Initial Case Report</td>
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<tr>
<td>RWJF</td>
<td>Robert Wood Johnson Foundation</td>
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<td>ELR</td>
<td>Electronic Lab Report</td>
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<td>SME</td>
<td>Subject Matter Expert</td>
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<tr>
<td>HIE</td>
<td>Health Information Exchange</td>
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<td>STLT</td>
<td>State, Territorial, Local and Tribal</td>
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<tr>
<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act</td>
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<tr>
<td>TFGH</td>
<td>Task Force for Global Health</td>
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Workgroup Activities (2018)

• **eCR implementation workgroup**: oversees eCR implementation and determines if sites have met the reportable conditions business requirements.

• **Evaluation committee**: assesses resources needed for nationwide expansion and measures outcomes of the project to recommend improvements.

• **Legal workgroup**: identifies and defines alternative legal approaches to eCR and advises the legal SMEs.

• **Pilot participation workgroup**: provides oversight, facilitation and support for the participants who transmit electronic initial case reports as part of the Digital Bridge pilot.

• **Strategy workgroup**: devises strategic goals and objectives on the future of Digital Bridge and its services and recommends strategies.
Additional Info on eCR Process

- Current model: Reportable Conditions Trigger Codes (RCTC) and Reportable Conditions Knowledge Management System (RCKMS) work in tandem to identify potentially reportable cases

<table>
<thead>
<tr>
<th></th>
<th>RCTC (&quot;trigger codes&quot;)</th>
<th>RCKMS (&quot;decision support&quot;)</th>
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<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Preliminary event identification; Set of codes to determine subset of patient encounters that require further evaluation</td>
<td>Secondary event assessment; Determines if the eICR data represent a reportable event and to which jurisdiction(s)</td>
</tr>
<tr>
<td><strong>Location Implemented</strong></td>
<td>Within local EHR environment</td>
<td>Centrally hosted as an application on the AIMS platform (i.e., a component of the decision support intermediary)</td>
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<tr>
<td><strong>Input</strong></td>
<td>Patient data (e.g., diagnoses, lab orders) in EHR</td>
<td>eICR; case reporting criteria authored by public health jurisdictions</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>If patient data matches any code within the RCTC list, EHR creates an eICR (electronic initial case report) and sends to RCKMS</td>
<td>If eICR meets a jurisdiction’s reporting criteria, eICR routed to public health</td>
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</tbody>
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## Digital Bridge Accomplishments

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
<th>2017-2018</th>
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<tbody>
<tr>
<td>• Established vision</td>
<td>• Formed distinct workgroups</td>
<td>• Established new workgroups (implementation taskforce, evaluation committee, strategy workgroup and legal and regulatory)</td>
</tr>
<tr>
<td>• Created project charter</td>
<td>• Developed functional requirements and a technical architecture diagram</td>
<td>• Began coordinating eCR implementations to launch in 2018</td>
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<tr>
<td>• Formed governance body</td>
<td>• Created initial sustainability plan and communications plan</td>
<td>• Selected a legal approach for initial implementation sites</td>
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<td>• Shared preliminary legal recommendations</td>
<td>• Held second successful in-person governance body meeting</td>
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<tr>
<td></td>
<td>• Selected seven eCR implementation sites</td>
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<tr>
<td></td>
<td>• Held first successful in-person governance body meeting</td>
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