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IIS-EHR Interoperability: Data at the Point of Care

Mary Beth Kurilo
Policy and Planning Director, AIRA
Thursday, May 17th, 2018
EHR-IIS Interoperability: Clarifying Terms

• **EHR:** Electronic Health Record
• **IIS:** Immunization Information System
• **Query (and Response):** The process of a provider or their staff, through their EHR, electronically sending a request to an IIS (and receiving a response for display and/or consumption)
• **Bidirectional:** Sometimes used as synonymous with query, but also represents any two way data flow (e.g., immunization submission followed by an acknowledgement message)
• **Real-Time:** Synchronous messaging that allows for the exchange of messages instantly or with negligible latency
EHR-IIS Query – The “Why”

• Why is it important?
  • EHR-IIS query
    ✓ Saves providers time
    ✓ Increases accuracy
    ✓ Improves security

• A 2016 study in Pediatrics demonstrated an increase in up-to-date status and a decrease in over-immunization following implementation of query

Stockwell et al., Pediatrics, 2016
EHR-IIS Query – The “Where”

• EHR-IIS query is available in the majority of IIS jurisdictions nationwide
  • 43 IIS have query and are being objectively measured through third party testing
  • Results demonstrate impressive strides toward standardization and adoption of query
    • Coupled with EHR adoption of certified technology, this will speed up onboarding and interoperability substantially
In New York City alone (population 8.5 million):
• 1,314 clinic sites querying
• **68 million query messages** received by the NYC Citywide Immunization Registry
  • Currently receiving 2.2 million/month
    • 1.8 million/month (82%) from clinics
    • 400,000/month (18%) from schools

*IIS Annual Report Data, 2016; NYC CIR Data, April, 2018*
EHR IIS Query – The “What”

How Well-Populated Are IIS?

What Does Exchange Look Like?
What Does Exchange Really Look Like?

1. Submit Query
   - Reconcile Data from the IIS
   - Query - QBP
   - Response - RSP (Imm Hx, Forecast)
   - Find Patient
   - Produce CDS for Patient
   - Return Patient

2. Submit Administered Immunization
   - Confirm Acceptance
   - Submission – VXU (HPV Today)
   - Acknowledgement - ACK (Confirm)
   - Find Patient
   - Adjudicate Submission
   - Return Acknowledgement

3. Submit Query
   - Review Data from the IIS
   - Query - QBP
   - Response - RSP (Imm Hx, Forecast)
   - Find Patient
   - Produce CDS for Patient
   - Return Patient
The Measurement and Improvement Initiative is a Phased, Rolling Process Addressing Query Stages

<table>
<thead>
<tr>
<th>Phases</th>
<th>Testing and Discovery Stage</th>
<th>Assessment Stage</th>
<th>Validation Stage</th>
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</thead>
<tbody>
<tr>
<td>Transport</td>
<td></td>
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<tr>
<td>Submission/ ACK</td>
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<td>Query/ Response</td>
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<td>CDS</td>
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<td>Data Quality (6)</td>
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<td>Functions (e.g. AFIX)</td>
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<td>Policy</td>
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<tr>
<td>Security</td>
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</tbody>
</table>

We are here
What happens at each stage?

Testing and Discovery

Assessment

Validation
Query Assessment – Who is Connected with AIRA and Testing Query?
The Aggregate Analysis Reporting Tool (AART) Dashboard

Announcements and Welcome!
Welcome to the new AART dashboard! A brief summary video of recent changes to AART can be found here. Click here for more details. The dashboard below allows you to quickly navigate to the results for each of the stages of Measurement. Hover over text to see links to results below.

Demo Dashboard

Testing and Discovery

Discovery
- Connected
  - December 2017

Transport
- Mar 2018
- May 2018

Submission and Acknowledgement
- May 2018

Query and Response
- May 2018

Assessment

Transport - Complete
- 2018
- Minor Differences

Submission and Acknowledgement
- Report not available

Query and Response
- Report not available

Validation
Query and Response

V4.0 Functional Standards

• **Functional Standard 1.5:** The IIS ensures that submitted vaccination and demographic data are processed and viewable in a timely manner.

• **Functional Standard 1.6:** The IIS assures the receipt, processing, and storage of demographic and vaccination data elements as endorsed by CDC.

• **Functional Standard 8.3:** The IIS receives queries from, and sends responses to, health information systems consistent with the current CDC-endorsed HL7 Implementation Guide.
### Query and Response

**Basic and Complete Measures for Validation**

<table>
<thead>
<tr>
<th>Assessment Measure</th>
<th>Basic Level</th>
<th>Complete Level</th>
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</thead>
<tbody>
<tr>
<td>1 - The IIS processes a query requesting a patient’s immunization record.</td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>2 - The IIS processes a query requesting a patient’s evaluated immunization record and forecast.</td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>3 - The IIS responds to a query for a known patient (one-to-one match).</td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>4 - The IIS responds to a query for a patient that is not in the IIS.</td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>6 - The IIS responds to a query that has a significant error that cannot be accepted.</td>
<td></td>
<td>✦</td>
</tr>
<tr>
<td>7 - The IIS responds to a query for a known patient and returns known Core Data Elements.</td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>8 - The IIS responds to a query with an RSP within 5 seconds or less for 95% of the queries submitted.</td>
<td></td>
<td>✦</td>
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</tbody>
</table>
What Does This Mean for Providers?

• Accurate and complete data, at the point of care, queried and available through their EHR
  • Consolidated record
  • Forecast of immunizations due
Providers & Staff: In Their Own Words

“The Minnesota IIS saves us time. With the click of a button, we can compare the EHR and IIS records. We rely on the Minnesota IIS to make sure that our immunizations are given correctly.”

Health Outreach Coordinator, Essentia Health, Minneapolis, Minnesota
Providers & Staff: In Their Own Words

“From my perspective, the interface into EPIC seems to be working great. This functionality has definitely improved content of the patient record as well as the time to enter in outside vaccine information.”

Provider | Portland, Oregon
“Our best defense against missed immunization opportunities is the ability to conduct an Immunization Query. Our bi-directional interface with our state immunization database has put accurate immunization history and the current CDC recommendations based on that history at our clinicians fingertips.”

Nurse, EHR Analyst | Las Vegas, Nevada
"Finally, we have an EHR upgrade that makes our lives easier."

Spectrum Health Clinic Staff | Holland, Michigan
Acknowledgements

• Thank you to:
  • The AIRA Measurement for Assessment and Certification Advisory Workgroup (MACAW) Members for their work in recommending concepts and measures
  • The AIRA Board of Directors for approval of measures and oversight of the process.
  • All IIS and EHRs for doing the hard work to implement and improve query functionality
Thank you!

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EHR-IIS Interoperability: Querying Data at the Point of Care

Prioritizing Seamless, Standardized Exchange
or
Really, why is this so hard?

Steve Murchie
CEO
Envision Technology Partners
It’s all based on standards

• Standards make things... standard, right?
Software is a bit trickier

• Specifications are more complex
Software is a bit trickier

- Many different (and perfectly valid) interpretations by various developers
- Local variation
- Some mistakes
Progress is excellent
Examples from Envision HL7 sites

* Representing 3.0M Query messages and 5.8M Update messages
IIS Implementer thought process

• Stick to the rules as firmly as possible

• But, try to be a “good neighbor”
Examples of interpreting the rules

• Standard has many, many conditions along the lines of...
  • “If <x> is present, then <y> must be populated.”
  • We try not to return errors unless data quality would suffer

• Standard has many options that IIS don’t normally support...
  • Credit card numbers as patient identification number
  • We return an informational warning

• Standard has more specific option that we support...
  • HL7 supports numerous address types
  • We map to mailing or physical address type as needed
History of Kansas HL7 Policies

• When adopting HL7 exchange in 2007, Kansas set a requirement that only bi-directional interfaces would be allowed
  • Policy was driven by data integrity, clinic efficiency, and to help facilities better leverage their want for bi-directional exchange from their vendors
  • 4 vendors connected and represented about 100 facilities

• In 2013 Kansas changed requirements to accommodate Meaningful Use Stage 2
  • MU 2 only required submissions (VXUs)
  • Kansas policy for HL7 exchange shifted by allowing uni-directional but not providing manual access to look up immunization history or forecasting
  • 26 vendors connected and represented about an additional 900 facilities
  • 16 vendors connected using bi-directional exchange
History of Kansas HL7 Policies (cont.)

• In 2017 Kansas changed requirements to allow uni-directional facilities to have access to manually look up immunization history and forecasting
  • With the onset of MU 3 we have not really had issues with getting EHRs to onboard with query and update functionality
  • Those that have chosen not to are actively engaged with reporting updates on the status of the queries
Bi-Directional Exchange in Practice

• Kansas educates all facilities to use the query-update-query procedure
  • Query to discover what is in KSWebIZ
  • Update to fill in missing immunizations and newly administered immunizations
  • Query to confirm the record is complete
Exciting advances on the horizon

• Inter-jurisdiction query and update via PHIZ HUB
• Direct integration with EHR systems using FHIR (Fast Healthcare Interoperability Resources), SMART Apps, CDS Hooks
• Direct-to-consumer delivery of vaccination history and recommendations
• IIS VTrckS inventory decrementing from EHR transactions
Questions?