Distributed Population Queries
Update for the HIT Standards Committee on
Query Health’s Proposed Standards, Reference Implementations and Pilots

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and Query Health Clinical Work Group Leader

May 24, 2012
Agenda - Objectives

• Scope
• Proposed standards
• Reference implementations
• Pilots
• Going forward / impact
Recognition and thanks for outstanding performance to:

• The Query Health Community
• Special kudos for their leadership roles:
  – Keith Boone, GE Healthcare
  – Jeff Brown, Harvard School of Population Medicine
  – Michael Buck, NYC Primary Care Information Project
  – Floyd Eisenberg, NQF
  – Marc Hadley, MITRE
  – Jeff Klann, Partners Healthcare
  – Alice Leiter, Center for Democracy and Technology
  – Shawn Murphy, Partners Healthcare
  – Rob Rosen, Lincoln Peak
  – Structured Documents Work Group, HL7
Enable a learning health system to understand population measures of health, performance, disease and quality, while respecting patient privacy, to improve patient and population health and reduce costs.
Distributed queries unambiguously define a population from a larger set.
Distributed Query Networks
Voluntary, No Central Planning

Community of participants that voluntarily agree to interact with each other. There will be many networks; requestors and responders may participate in multiple networks.
Develop modular, testable portfolio of Query Health standards and specifications that can be adopted by the industry, and support key HITECH and govt. priorities.
Two Levels of Standards

1. Query Envelope and Policy Requirements:
   – Applicable to any distributed query

2. Query, Data and Results
   – Applicable to clinical data sources (e.g., EHRs, HIEs, etc.)
The Query Envelope

• Query agnostic
• Content agnostic
• Metadata facilitates privacy guidance from HIT Policy Committee
• RESTful Interface specification to integrate RI natively
Implementing Policy Guidance

HIT Policy Committee and the Privacy and Security Tiger Team policy guidance informed:

- RI Policy enablement layer
- Data use agreement template
- Guidelines document
Two Levels of Standards

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The Query
New HQMF

• Health Quality Measure Format
• HQMF newly modified to support the needs for dynamic population queries:
  – More executable
  – Simplified
• Advantages for query
  – Avoids “yet another standard”
  – Secure (vs procedural approach)
  – Works across diverse platforms
• Benefits – Speed and Cost
Existing HQMF compared to New HQMF

Example: Measurement Period = 1 year

Existing HQMF

```
<subjectOf>
  <measureAttribute>
    <templateId root="2.16.840.1.113883.3.560.1.74"/>
    <id root="55BFEB56-4FFF-477E-9D2D-3F34C14FD057"/>
    <code code="MSRTP" displayName="Measurement period" codeSystem="2.16.840.1.113883.3.560"/>
    <value xsi:type="EXPR_PQ" value="12" unit="m">
      <expression mediaType="text/plain">measureEndDate - measureStartDate</expression>
    </value>
  </measureAttribute>
</subjectOf>

<subjectOf>
  <localVariableName>measureStartDate</localVariableName>
  <measureAttribute>
    <templateId root="2.16.840.1.113883.3.560.1.75"/>
    <id root="7A4CEE7F-3003-44C6-BFFF-822C5A6D6888"/>
    <code code="MSRSD" displayName="Measurement start date" codeSystem="2.16.840.1.113883.3.560"/>
    <value xsi:type="TS" value="00000101"/>
  </measureAttribute>
</subjectOf>

<subjectOf>
  <localVariableName>measureEndDate</localVariableName>
  <measureAttribute>
    <templateId root="2.16.840.1.113883.3.560.1.75"/>
    <id root="EA5776B1-D706-4BC9-AD30-CD2754AD99B8"/>
    <code code="MSRED" displayName="Measurement end date" codeSystem="2.16.840.1.113883.3.560"/>
    <value xsi:type="TS" value="00001231"/>
  </measureAttribute>
</subjectOf>

<subjectOf>
  <measureAttribute>
    <code code="MSRMD" codeSystem="2.16.840.1.113883.3.560" displayName="Measurement duration"/>
    <value xsi:type="ED" mediaType="text/plain">12 month(s)</value>
  </measureAttribute>
</subjectOf>
```

New HQMF

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<controlVariable>
  <localVariableName>MeasurePeriod</localVariableName>
  <measurePeriod>
    <id root="0" extension="StartDate"/>
    <value>
      <width unit='a' value='1'/>
    </value>
  </measurePeriod>
</controlVariable>
```

Clinical Element Data Dictionary

- Demographic
- Patient Contact Information
- Payer Information
- Healthcare Provider
- Allergies & Adverse Reactions
- Encounter
- Surgery
- Diagnosis
- Medication
- Procedure
- Immunization
- Advance Directive
- Vital Signs
- Physical Exam
- Family History
- Social History
- Order
- Result
- Medical Equipment
- Care Setting
- Enrollment
- Facility

- Standards independent dictionary
- Aligned with QDM
- Built for flexible response to evolving standards (e.g., CIMI)
The Results
New QRDA

• Quality Reporting Document Architecture
  – Category I – Patient Level
  – Category II – Patient Populations
  – Category III – Population Measures

• Working together with HL7 and Structured Documents Work Group towards upcoming ballot

• Very productive start at May HL7 meeting
Concept Mapping

- Need consistently computable definitions for “meat & potatoes” concepts like Type 2 Diabetes
- Quality Measure workgroup recommended NLM be the definitive source for Value Sets
- Planning to align with publication, managing and curating of Value Sets
- Query Health is starting with examples from the NQF CQM-based value sets.
- In order to share value sets in a standard way, Query Health is adopting the Sharing Value Sets (SVS) Profile using a RESTful web service.
Query Health
How it works together
Reference Implementations

• Three open source distributed query solutions
  – i2b2 60+ large health systems
  – PopMedNet FDA Mini-Sentinel, MDPHNet
  – hQuery Laika / PopHealth successor “Hadoop-like” technology

• Query Health
  – Provides a standards overlay on top of proven solutions
  – Standardizes the questions and responses
  – Enables faster addition of data sources at lower cost
## Query Health Pilots

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<tr>
<th>Pilot</th>
<th>Focus</th>
<th>RI Queries</th>
<th>RI Policy Layer</th>
<th>Data Sources</th>
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<td>i2b2</td>
<td>PMN</td>
<td>RHIOs EHR Vendor</td>
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## Next steps

### 2012

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<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
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### Query Health Pilot Timeline

- **Pilot Kickoffs**
- **DOH State of New York Department of Health**
- **FDA**
- **CDC**
- **MDPHnet**
- **Beth Israel Deaconess Medical Center**
- **Allscripts**

**Pilots Ongoing into 2013**

### HL7 Ballot Timeline

- **Vancouver Meeting**
- **Post-Meeting HQMF and QRDA Updates**
- **HQMF and QRDA Pilot Feedback Updates**
- **Final Ballot Prep**
- **Baltimore Meeting**

**Joint HL7 SDWG/S&I Framework Workgroup Meetings (Every Tuesday)**

### Reference Implementation Timeline

- **Pilot Operational Guidelines**
- **i2b2 - PopMedNet Integration**
- **HQMF Translator Intermediate Model**
- **PopMedNet Query Envelope Updates**
- **Baseline Sample SQL Translators**
- **PopMedNet HQMF Implementation**
- **QRDA Translators**
- **hQuery/PopHealth Stage 2 Measure Translator**
Query Health delivers the standards and reference implementation services for distributed population queries.

Game changer for how the healthcare community can begin to think about:

- Quality measures
- A learning health system
- Health system performance
- Population health
- Disparities
- Comparative effectiveness
- Policies around Health IT