Quality Measures w/ HL7® FHIR®

Samuel Sayer
About Me

- Samuel Sayer
- Chief Engineer, Health Policy & Operation
- Former Data Exchange for Quality Measures (DEQM) Co-Chair
- MITRE
Burden Reduction

- Reduces Burden:
  - Aligns eCQMs with industry clinical data exchange framework, reducing implementation burden
  - Enables automated data retrieval from EHR and submissions of quality data through use of standards-based APIs

- Simplifies Data Mapping:
  - Single mapping to FHIR vs. mapping to HQMF and QRDA

- Improves Alignment between eCQMs & Clinical Decision Support (CDS):
  - Both use a common FHIR data model (QI Core)
Standards Evolution

Current

- eCQM Specifications
  - QDM Data Model
  - CQL Logic
  - HQMF eCQM

- eCQM Reporting
  - QDM Data Model
  - QRDA I
  - QRDA III

Emerging

- eCQM Specifications
  - QI-Core Profiles
  - CQL Logic
  - Quality Measure IG

- eCQM Reporting
  - QI-Core Profiles
  - DEQM Individual Report
  - DEQM Summary Report
Example Measure – Colorectal Cancer Screening

define "Initial Population":
    AgeInYearsAt(date from start of "Measurement Period") in Interval[46, 75]
    and exists AdultOutpatientEncounters."Qualifying Encounters"

define "Denominator":
    "Initial Population"

define "Denominator Exclusions":
    Hospice."Has Hospice Services"
    or exists "Malignant Neoplasm"
    or exists "Total Colectomy Performed"
    or AIFrailLTCF."Is Age 66 or Older with Advanced Illness and Frailty"
    or AIFrailLTCF."Is Age 66 or Older Living Long Term in a Nursing Home"
    or PalliativeCare."Palliative Care in the Measurement Period"

define "Numerator":
    exists "Fecal Occult Blood Test Performed"
    or exists "Fecal Immunochemical Test DNA Performed"
    or exists "Flexible Sigmoidoscopy Performed"
    or exists "CT Colonography Performed"
    or exists "Colonoscopy Performed"
Example Data Element


declare "Colonoscopy Performed":
    (Status."Completed Procedure"([Procedure: "Colonoscopy"])) Colonoscopy
    where QICoreCommon."ToInterval" ( Colonoscopy.performed ) ends during day of Interval[start of "Measurement Period" - 9 years, end of "Measurement Period"]
Measure Structure

Measure (CMS156)

Group (IPP)

Group (DENOM)

Group (NUMER)

$data$-requirements

Data Requirement

Library (CQL)
A DataRequirement type includes the attribute definitions a measure requires in order for a data element to apply.

The $data-requirement operation will return a Library including a list of DataRequirements for a Measure.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Cardinality</th>
<th>Allowed Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>1..1</td>
<td>Any FHIR Resource</td>
</tr>
<tr>
<td>codeFilter</td>
<td>0..*</td>
<td>Coding, valueSet</td>
</tr>
<tr>
<td>dateFilter</td>
<td>0..*</td>
<td>DateTime, Period, Duration</td>
</tr>
<tr>
<td>valueFilter (extension)</td>
<td>0..*</td>
<td>*</td>
</tr>
</tbody>
</table>
Knowledge Repository

Data Aggregator

Search Params - /Procedure

<table>
<thead>
<tr>
<th>Param</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>code:in</td>
<td>2.16.840.1.113883.3.464.1003.108.12.1020</td>
</tr>
<tr>
<td>performedgte</td>
<td>1/1/11</td>
</tr>
<tr>
<td>performedlte</td>
<td>12/31/21</td>
</tr>
</tbody>
</table>

DataRequirement – EXM130

<table>
<thead>
<tr>
<th>Type</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>codeFilter.path</td>
<td>code</td>
</tr>
<tr>
<td>codeFilter.valueSet</td>
<td>2.16.840.1.113883.3.464.1003.108.12.1020</td>
</tr>
<tr>
<td>dateFilter.path</td>
<td>performed</td>
</tr>
<tr>
<td>dateFilter.valuePeriod.start</td>
<td>1/1/11</td>
</tr>
<tr>
<td>dateFilter.valuePeriod.end</td>
<td>12/31/21</td>
</tr>
</tbody>
</table>
Measure Calculation
Future

- **HL7**
  - QI-Core STU6 ballot to follow finalization of US-Core STU6
    - Followed by updates to other quality IGs
- **HIMSS**
  - *The Next Generation of Quality Measurement and Reporting* – Wednesday 2:10-2:40pm
  - *Driving Value With Interoperability: Building a Digital Quality Ecosystem, Yale, NCQA and CMS* – Thursday 4:00-5:00pm