Reporting Electronic Clinical Quality Measures (eCQMs) Using the HL7® Fast Healthcare Interoperability Resources® (FHIR®) Standard

July 1, 2021
3:00 PM ET
Agenda

• Welcome and background
• Review Quality Measure architecture
• Data Exchange for Quality Measures (DEQM) deep dive:
  • Describe exchange roles, workflow steps
  • Review Data Exchange scenarios
  • Review Measure Reporting scenarios
• Question & Answer session
Quality Improvement Ecosystem

1. **Researcher, Payer & Public Health Surveillance**
   - Analyze what is happening

2. **Clinical Practice Guidelines**
   - What should happen

3. **Clinical Decision Support**
   - Making it happen

4. **Patient, Provider, Population, Public**

5. **Reporting**
   - Reporting what happened

6. **Measurement & Analytics**
   - Measuring what happened

7. **Clinical Care**
   - Clinician & Patient Workflow

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Reporting eCQMs Using the HL7® FHIR® Standard

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CMS
Quality Measurement Standards Landscape

1. Producers
   - Providers
   - Patients
   - Care Givers
   - Clinical Systems
   - Patient Engagement
   - Healthcare Systems
   - Labs and Imaging

2. Consumers
   - Aggregators
   - Payers
   - Health Information Exchanges
   - Public Health Agencies
   - Quality Data Submitters
   - Population Health

3. Specifiers
   - Quality Agencies
   - Government Agencies
   - Industry Consortiums
   - Clinical Professional Societies

Measure Specification

FHIR

Measure Reporting

CQL – Clinical Quality Language
DEQM - Data Exchange for Quality Measures
FHIR – Fast Healthcare Interoperability Resources
IG – Implementation Guide
QI – Quality Improvement

Retrieved from: HL7 Data Exchange For Quality Measures STU3 for FHIR R4 website

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Reporting eCQMs Using the HL7® FHIR® Standard

**Evolution of eCQM Standards**

<table>
<thead>
<tr>
<th>Current</th>
<th>Emerging</th>
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<tbody>
<tr>
<td>eCQM Specifications</td>
<td>eCQM Specifications</td>
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<tr>
<td>QDM Data Model</td>
<td>QI-Core Profiles</td>
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<tr>
<td>CQL Logic</td>
<td>CQL Logic</td>
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<td>HQMF eCQM</td>
<td>Quality Measure IG</td>
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<td>eCQM Reporting</td>
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<td>QDM Data Model</td>
<td>QI-Core Profiles</td>
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<tr>
<td>QRDA I</td>
<td>DEQM Individual Report</td>
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<tr>
<td>QRDA III</td>
<td>DEQM Summary Report</td>
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Goal is to align quality measurement standards for eCQM development and reporting using FHIR

- QI-Core replaces QDM for clinical data element representation
- Quality Measure IG replaces HQMF for eCQM structure
- DEQM IG for Individual and Summary replaces QRDA I and III

Quality Scenarios in DEQM

Exchange Scenarios:
- Submit Data
- Collect Data
- Subscription

Reporting Scenarios:
- POST

Measurement Period

Producers

Consumers/Reporters

Receivers

data-collection

individual summary
patient-list
Reporting/Exchange Roles

- Producer – clinician or clinician system that produces data as part of the delivery of care
- Consumer – payers, health information exchanges (HIEs), aggregators, reporting vendors
- Reporter – providers, clinics, hospitals, institutions
- Receiver – payers, agencies
- Knowledge Repository – publishes eCQM specifications
- Terminology Service – publishes eCQM value sets
Workflow Steps

- Setup – Measure selection, terminology load
- Attribution – Provider attribution
- Submission – Submitting data-of-interest
- Evaluation – Evaluation of quality measures
- Care Gaps – Determination of care gaps
Setup

Submitting System  Knowledge Repository  Terminology Service  Receiving System

1. Setup

Measure selection

Loop [per measure]
- $data-requirements
  - Process data requirements
    - Library.dataRequirement (0..*)
  - Analyze requirements
    - 1. Collect value sets across data requirements
    - GET ValueSet(s)
    - Determine applicable expansions
    - ValueSet(s)

1. Include date-based filtering
2. Map filters to search parameters
3. Prune data elements based on measure usage
4. Eliminate duplicates
Attribution

2. Attribution/Selection

- Submitting System
- Knowledge Repository
- Terminology Service
- Receiving System

Loop
- [per measure]
  - Determine attribution
  - DaVinci Attribution use case
  - Determine initial population
  - Subset attributed patients by initial population applicability

Measure selection
DEQM defines three exchange operations:

- **$submit-data**
  - A data Producer submits data to a Consumer
- **$collect-data**
  - A data Consumer requests data from a Producer
- **Subscription**
  - Under development, will support subscription-based exchange
Conceptual Submit Data Workflow

1. Confirm Data Requirements

2. Submit Data
Submission (per-patient)
Technical $submit-data workflow

- Colon Cancer Screening Measure Data Exchange-Submit Data Example
Conceptual Collect Data workflow

Producer

Collect CQM Data

OperationOutcome

Consumer
Technical $collect-data workflow

• Colon Cancer Screening Measure Data Exchange: Collect Data example
Considerations for Data Exchange Scenarios

- Incremental vs Snapshot
- Provenance of submitted data (multi-tenant)
- Use of Bulk Data protocol
DEQM defines three reporting scenarios:

- Individual Reporting
- Summary Reporting
- Patient-List Reporting
  - Patient-list reporting is under development
Individual Reporting

• Individual report contains data for one patient for one measure
• Data elements in the report are defined by the measure reported on
• Supported by the DEQM Individual MeasureReport Profile
**Individual Reporting: Default Profiles**

<table>
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<tr>
<th>FHIR Resource Type</th>
<th>Profile Name</th>
<th>Link to Profile</th>
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<tbody>
<tr>
<td>Measure</td>
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<tr>
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<td>DEQM Organization Profile</td>
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</tr>
<tr>
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<td>QI Core Patient Profile</td>
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Individual Reporting Technical Workflow

• Colorectal Cancer Screening Individual Reporting Example
Summary Reporting

- Summary reports contain calculated summary data for one or more measures. This includes:
  - Patient counts for initial population, denominator, denominator exclusions/exceptions, and numerator
  - Summary data for stratifier criteria (e.g., gender, age)
## Summary Reporting Default Profiles

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Summary Reporting Technical Workflow

- Colorectal Cancer Screening Summary Report example
End to End Use Case: Medication Reconciliation

- Medication Reconciliation Post-Discharge
Current Activities

• CMS began converting QDM-based eCQMs to use FHIR in spring of 2019

• CMS program measures continue to be tested at HL7 Connectathons
  • See GitHub for work-in-progress eCQMs and example expressions

• The Da Vinci Project advances DEQM implementation through multi-stakeholder collaboration
Current HL7 Activities

• eCQM conversion of 2020 CMS program measures to FHIR is ongoing using MAT on FHIR
• Planning for ballots and updates
  • DEQM was balloted September 2020, applying updates
  • QM IG May 2021- ballot
  • QI-Core based on US Core Fall 2021- planned update
• HL7 convenes Connectathons three times per year
  • January
  • May
  • September
Resources to Get You Started

- Current FHIR Measures on [GitHub](#)
- HL7 FHIR R4 Standards and IGs
  - Current Version R4.0.1
  - US Core R4 version (STU4 (v4.0.0) published Jun 2021)
  - DEQM (STU3 (v3.0.0) published Jun 2021)
  - QM IG (STU2 (v2.0.0) published Feb 2020)
- Electronic Clinical Quality Improvement (eCQI) Resource Center [FHIR Education page](#)
Resources to Get Involved

- Collaborative learning
  - Cooking with CQL, QDM, and FHIR Webinars
- Standards advancement
  - HL7 Clinical Quality Information workgroup
  - HL7 FHIR® Connectathons
- eCQI Resource Center FHIR Connect page
Questions?