Next Generation of Quality Reporting

Samuel Sayer
About Me

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

Researcher, Payer & Public Health Surveillance
   Analyze what is happening

Clinical Practice Guidelines
   What should happen

Clinical Decision Support
   Making it happen

Patient, Provider, Population, Public

Reporting
   Reporting what happened

Measurement & Analytics
   Measuring what happened

Clinical Care
   Clinician & Patient Workflow

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Background

- The Data Exchange for Quality Measures (DEQM) implementation guide started development in 2018 under the Da Vinci FHIR Accelerator
  - DSTU1 focused on medication reconciliation and simple use cases
  - DSTU2 included more advanced reporting functionality
  - DSTU3 added support for care gap reports
  - DSTU4 (currently undergoing ballot reconciliation) will add support for bulk transactions and more advance care gap reports
DEQM: Exchange vs Reporting

Exchange Scenarios:
- Submit Data, Collect Data, Subscription
- Bulk Data, bulk-submit-data*

Reporting Scenarios:
- POST

Measurement Period

Producers
Consumers/Reporters

receivers

individual summary
patient-list
data-collection
DEQM Reporting

Optional

Auth Token

X-Provenance Header

Required

Measure Report

Resources

Measure/EXM130/$submit-data

HTTP 200 OK
DEQM Data Collection

Optional

Auth Token

X-Provenance Header

Measure Report

Required

Measure/EXM130/$collect-data

Resources

Measure Report + Patient Data

Producer

Consumer

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DEQM Gaps in Care
Reporting Cycle

$submit-data

$care-gaps
DEQM DSTU4
Summary of New Features

- Bulk Data Support
- Detailed Care Gaps
- Additional $collect-data/$submit-data functionality
DEQM Bulk Reporting

Optional
- Auth Token
- X-Provenance Header

Required
- Measure/EXM130/$deqm.bulk-submit-data
- ndJson URLs

HTTP 200 OK

Producer

Consumer

Measure/EXM130/$deqm.bulk-submit-data

$export

Ndjson files
Example Measure – Care Gaps

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"
Detailed Care Gaps

- Can we tell the provider which data elements caused a care gap based on quality measure CQL definition?
  - "No valid colonoscopy found for patient"
- How much detail can we give them?
  - "Patient is overdue for colonoscopy; last colonoscopy was 12 years ago"
- Measure logic introduces difficult edge cases
Negative Improvement Notation, Multiple Paths

"Has Most Recent HbA1c Without Result" or "Has Most Recent Elevated HbA1c" or "Has No Record Of HbA1c"
define "Numerator":
    exists "Cervical Cytology Within 3 Years"
    or exists "HPV Test Within 5 Years for Women Age 30 and Older"
Multiple ways to close a Gap

define "Numerator":
    exists "Colonoscopy Performed"
    or exists "Fecal Occult Blood Test Performed"
    or exists "Flexible Sigmoidoscopy Performed"
    or exists "Fecal Immunochemical Test DNA"
    or exists "CT Colonography Performed"
define "Numerator":
"Encounter with Two or More Concurrent Opioids at Discharge"
union "Encounter with a Concurrent Opioid and Benzodiazepine at Discharge"
### Detailed Care Gaps

This structure is derived from `[DetectedIssue](#)`

<table>
<thead>
<tr>
<th>Name</th>
<th>Flags</th>
<th>Card.</th>
<th>Type</th>
<th>Description &amp; Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>DetectedIssue</td>
<td>0..*</td>
<td></td>
<td>DetectedIssue</td>
<td>Clinical issue with action</td>
</tr>
<tr>
<td>modifierExtension:gapStatus</td>
<td>?I</td>
<td>1..1</td>
<td>DEQMGapStatusModifierExtension</td>
<td>Gap Status</td>
</tr>
<tr>
<td>code</td>
<td>S</td>
<td>1..1</td>
<td>CodeableConcept</td>
<td>Issue Category, e.g. drug-drug, duplicate therapy, etc.</td>
</tr>
<tr>
<td>coding</td>
<td></td>
<td>1..*</td>
<td>Coding</td>
<td>Code defined by a terminology system</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td>1..1</td>
<td>url</td>
<td>Identity of the terminology system</td>
</tr>
<tr>
<td>code</td>
<td></td>
<td>1..1</td>
<td>code</td>
<td>Symbol in syntax defined by the system</td>
</tr>
<tr>
<td>patient</td>
<td>S</td>
<td>1..1</td>
<td>Reference(QICore Patient)</td>
<td>Associated patient</td>
</tr>
<tr>
<td>evidence</td>
<td>S</td>
<td>1..*</td>
<td>BackboneElement</td>
<td>Supporting evidence</td>
</tr>
<tr>
<td>detail</td>
<td>S</td>
<td>1..1</td>
<td>Reference(DEQM Individual MeasureReport Profile</td>
<td>Detailed Care Gap Guidance Response)</td>
</tr>
</tbody>
</table>

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### Guidance Response

**Terminology Bindings (Differential)**

<table>
<thead>
<tr>
<th>Path</th>
<th>Conformance</th>
<th>ValueSet</th>
</tr>
</thead>
<tbody>
<tr>
<td>GuidanceResponse.reasonCode</td>
<td>preferred</td>
<td>CareGapReasons (a valid code from Care Gap Reasons Code System)</td>
</tr>
</tbody>
</table>
Grouping Gaps

• Multiple care gaps may exist for a single patient

• OR gaps
  • A set of gaps for which only one gap needs to be closed in order for the patient to meet standards for quality of care

• AND gaps
  • A set of gaps for which every gap must be closed in order for the patient to meet standards for quality of care
Additional Functionality

- `$collect-data` -> `$deqm.collect-data`
  - Optional validation of data elements
  - Filter queries by a location
- `$submit-data` -> `$deqm.submit-data`
  - Support for submission for multiple measures (also in `$bulk-submit-data`)
Driving Value With Interoperability: Building a Digital Quality Ecosystem, Yale, NCQA and CMS – Thursday 4:00-5:00pm

Samuel Sayer

ssayer@mitre.org

https://www.linkedin.com/in/samuelsayer/

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