Introduction to QRDA

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Outline

Overview of Quality Measurement
QRDA Category I
Quality Data Model and QRDA
QRDA III
CMS QRDA Implementation Guide
Summary
Overview of Quality Measurement
Quality Reporting Process

- Patient data
- Claims data
- Other data

Enterprise Health Data

Informs eMeasure

Informs Analytics engine

- Individual quality report(s)
- Aggregate quality report

Data capture
calculate
export/report
Quality Reporting Standards

Clinical Document Architecture (CDA)

- Consolidated CDA (C-CDA)
- Quality Reporting Document Architecture (QRDA)
  - QRDA Category I (QRDA-I)
  - QRDA Category III (QRDA-III)

Health Quality Measure Format (HQMF - eMeasure)

US-Realm: Quality Data Model (QDM)
HQMF: An international standard for the formal representation of clinical quality measure metadata, data elements, and logic.

HQMF IS NOT CDA
Quality Reporting Process

Data capture

Informs

Enterprise Health Data

Informs

Analytics engine

Informs

Individual quality report(s)

Aggregate quality report

Patient data

Claims data

Other data
What is CDA R2?

A specification for exchange of clinical documents, defining their structure and semantics

ANSI standard developed by HL7’s Structured Documents Work Group (SDWG)

ISO standard

CDA R2 relies on

- XML
- HL7 RIM
- HL7 development methodology
- Controlled vocabularies (SNOMED, LOINC, CIE-9, HL7, etc.)
What is XML?

XML is Extensible Markup Language (www.w3c.org)

In XML, structure & format are conveyed by *markup* which is embedded into the information

```xml
- <section>
  <code code="11348-0" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" displayName="HISTORY OF PAST ILLNESS" />
  <title>Antécédents médicaux</title>
  - <text>
    - <table border="1">
      - <tbody>
        - <tr>
          <th>Pathologie</th>
        </tr>
      </tbody>
    </table>
  </text>
</section>
```
Good Health Clinic Consultation Note

Patient: Henry Levin, the 7th
Birthdate: September 24, 1932
Consultant: Martin von Nostrand, MD

History of Present Illness

Henry Levin, the 7th is a 67 year old male referred for asthma in his teens. He was hospitalized twice last been able to be weaned off steroids for the past several years.

Past Medical History

- Asthma
- Hypertension (see HTN.cda for details)
- Osteoarthritis, right knee

Medications

- Theodur 200mg BID
- Proventil inhaler 2 puffs QID PRN
CDA = Header + Body

CDA Header

• Patient, provider, author, and encounter information

CDA Body

• Clinical report
  o Discharge Summary
  o Care Record Summary
  o Progress Note
  o H&P
  o Public health report

• ... any content that carries a signature
Implementation Guides (IGs)

Developed by HL7 Structured Documents WG

• with HL7 Domain Work Groups
• by other standards organizations
• by other agencies (CDC...)

Balloted IGs to-date: US Realm-specific & Universal

Define *templates* for CDA

• Templates are rules that mold the CDA xml for a specific use case
• E.g. a template for a physical exam or medication or allergy
Cooking with Templates

CDA Without Templates

Like a kitchen full of raw ingredients, but no menu, recipes, cookbooks, or other guidance.

Very flexible, but hard to work with if you are not an expert cook.

Only the cook knows what’s going on until the meal has been cooked and delivered to the table.

Templated CDA

Same kitchen, but...

Full menu and recipes are provided.

Food is prepped and ready to be cooked to order according to the provided recipes.

Less flexible, but much easier for the novice to work with.

Both the cook and the diner know what to expect.
What is QRDA?

QRDA is a Clinical Document Architecture (CDA)-based standard for reporting patient quality data for one or more quality measures.

**QRDA Category I (Single-patient Report)**

Individual patient-level report that contains data defined in the measure.

**QRDA Category II (Patient List Report) * **

Multi-patient report across a defined population that may or may not identify individual patient data within the summary.

**QRDA Category III (Calculated Report)**

Aggregate quality report with a result for a given population and period of time.

*Cat I and Cat III are Draft Standards for Trial Use (DSTU). Cat II was proposed, but never formally balloted as a DSTU.*
QRDA 1 is a Kind of Templated CDA

QRDA is a CDA-based standard designed to have those data elements needed for quality measurement.

A QRDA document using C-CDA templates plus others

A CDA document using C-CDA templates

C-CDA

Demographics

Allergies

Family History

Social History

Vital Signs

Medications

Problems

Payer

Chief Complaint

Discharge Diagnosis

Transport

Mode of Transport

Surgical Finding

Discharge Diet

New Template...
QRDA 1 is a Kind of Templated CDA

QRDA is a CDA-based implementation guide that contains those data elements needed for quality measurement.
Quality Reporting Process

Data capture

- Patient data
- Claims data
- Other data

Informs

- Enterprise Health Data

Informs

- eMeasure
- Analytics engine

- Individual quality report(s)
- Aggregate quality report

Calculate

Export/report

QRDA Category III

An aggregate quality report that contains calculated summary data for one or more measures for a specified population of patients within a particular health system over a specific period of time.

Refers to identifiers in an eMeasure or other query.

Communicates data residing in health information systems that are stripped of all patient identifiers, protecting patients and healthcare providers from the risks of inadvertent leakage of private information.
Quality Reporting Process

Data capture

<table>
<thead>
<tr>
<th>Patient data</th>
<th>Claims data</th>
<th>Other data</th>
</tr>
</thead>
</table>

Enterprise Health Data

| eMeasure | Analytics engine |

Informs

| Individual quality report(s) | Aggregate quality report |

| QRDA III |

export/report

calculate
Quality Reporting Standards

- HL7 V3 RIM
  - CDA R2
  - HQMF R2
- CCDA
- QRDA I
- QRDA III
- QDM-based HQMF

Legend:
- Green: Universal Standard
- Brown: Implementation Guide
QRDA Category I
QRDA-I Single Patient Report

A QRDA-I* report is an individual patient-level quality report.

Each report contains quality data for one patient for one or more quality measures, where the data elements in the report are defined by the particular measure(s) being reported on.

A QRDA-I report contains raw applicable patient data. When pooled and analyzed in a report, these quality data are used to calculate population measure metrics.

* Category I was published July 2012 and is required in MU2 § 170.205(h).
QRDA Category I

QRDA-I Framework: A generic framework for reporting patient-level data about any quality measure

Quality Data Model (QDM)-based QRDA-I: A specific use of the framework, to align with Meaningful Use Stage 2 (MU2) QDM-based eMeasures

US Realm
### QRDA-I – Single Patient Report

- **Contact info**: 1020 Healthcare Drive, Burlington, MA 02368, US; Tel: (555)555-1003
- **Contact info**: 21 North Ave., Burlington, MA 02368, US; Tel: (555)555-1003
- **Legal authenticator**: Virgil Verify, MD of Good Health Hospital signed at December 31, 2011
- **Document maintained by**: Good Health Hospital

#### Table of Contents
- Measure Section
- Reporting Parameters
- Patient Data

#### Measure Section
<table>
<thead>
<tr>
<th>Measure Title</th>
<th>eMeasure Title Identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>eMeasure Identifier (MAT)</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Asthma Care (CAC-1) Relievers for Inpatient Asthma</td>
<td>0c79d5ed-1487-4d79-b4c3-180c60f0781c</td>
<td>1</td>
<td>0142</td>
<td>90</td>
<td>8e49282-373-82e2-0137-780421505d5f</td>
</tr>
<tr>
<td>Children’s Asthma Care (CAC-2) Systemic Corticosteroids for Inpatient Asthma</td>
<td>dfc7145c-3691-457c-88ea-774233c872a0</td>
<td>1</td>
<td>0144</td>
<td>106</td>
<td>8a49282-373-82e2-0137-780421505d5f</td>
</tr>
</tbody>
</table>

#### Reporting Parameters
- Reporting period: 01 Jan 2011 - 31 Dec 2011

#### Patient Data
<table>
<thead>
<tr>
<th>Data Element</th>
<th>Value</th>
<th>Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounter, Performed: Emergency Department Visit</td>
<td>Emergency Department visit</td>
<td>03/01/2011 4:00 - 03/01/2011 8:30</td>
</tr>
<tr>
<td>Encounter, Performed: Encounter Inpatient</td>
<td>Hospital admission</td>
<td>03/01/2011 9:00 - 03/03/2011 10:30</td>
</tr>
<tr>
<td>Diagnosis, Active: Asthma</td>
<td>Asthma</td>
<td>01/01/2011</td>
</tr>
<tr>
<td>Medication, Administered not done: Patient refusal, Asthma Relievers: albuterol 1.25 MG (albuterol sulfate 1.5 MG) per 3 ML Inhalant Solution</td>
<td>Drug declined by patient - reason unknown</td>
<td>Null</td>
</tr>
<tr>
<td>Medication, Administered: Systemic Corticosteroids</td>
<td>Hydrocortisone 10 MG Oral Tablet</td>
<td>03/01/2011 15:00</td>
</tr>
<tr>
<td>Patient Characteristic Clinical Trial Participant</td>
<td>True</td>
<td>03/01/2011</td>
</tr>
<tr>
<td>Patient Characteristic Payer</td>
<td>Medicare</td>
<td>03/01/2011</td>
</tr>
</tbody>
</table>
QRDA Framework

QRDA-I is designed as a framework for reporting patient-level data about any quality measure.
QRDA-I Header

Re-uses US Realm Header

Further Restrictions:

• Constrains document code (code="55182-0" Quality Measure Report (CodeSystem: LOINC 2.16.840.1.113883.6.1)
• Constrains RecordTarget to 1 (allows only one patient)
• Requires a legalAuthenticator
• Specifies additional (optional) provider and patient IDs important to CMS
• Defines the required sections
Reporting Parameters Section

The Reporting Parameters Section provides information about:

- Reporting time interval
- May contain other information that provides context for the patient data being reported
Measure Section

Contains information about the measure or measures being reported:

- Identifies the quality measure(s) being reported
- Must contain a reference to at least one externalDocument ID from each measure
Patient Data Section

Contains patient data elements as defined by the referenced measure(s).
Validation of QRDA

• Schema
  • Validate the document XML is following the rules of CDA

• Schematron
  • validate constraints and rules specific to QRDA
  • validate constraints that can’t be specified in W3C schema language
    
    Example: A code element must contain either code and codeSystem attributes or a nullFlavor attribute.
Validation

Implementation Guide

- Schema (Is it CDA?)
- Schematron (Is it QRDA?)
- CMS Schematron (Is it CMS QRDA?)

- Is it a Car? (4 wheels, seats, headlights, steering)
- Is it a Muscle Car? (powerful engine, muscular body, big wheels)
- Is it a Ford Mustang? (Ford branding, Ford engine, 2 doors, Mustang VIN #)
Quality Data Model and QRDA I
Building-Block Approach to eMeasures: Quality Data Model

A model of information used to express patient, clinical, and community characteristics as well as the basic logic required to express quality measure criteria.

Describes the data elements and the states or contexts in which the data elements are expected to exist in clinical information systems.
Quality Data Model

- Quality Data Model (QDM) is a “Domain Analysis Model”
- HL7 has implemented QDM in HQMF and QRDA
- Provides a common “language” for all eMeasures.
QDM Composition

Category

Diagnostic Study, Laboratory Test, Medication

Datatype

Diagnostic Study, performed
Laboratory Test, order
Medication, administered

Attributes

Diagnostic Study, performed (method)
Laboratory test, order (reason)
Medication, administered (dose)
QDM Categories

Diagnosis
Encounter
Functional Status
Laboratory Test
Medication
Physical Exam
Procedure
QDM Datatypes and Attributes

<table>
<thead>
<tr>
<th>Datatype</th>
<th>Definition</th>
<th>Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis, Active</td>
<td>To meet criteria using this datatype, the diagnosis indicated by the Condition/Diagnosis/Problem QDM category and its corresponding value set should reflect documentation of an active diagnosis. Keep in mind that when this datatype is used with timing relationships, the criterion is looking for an active diagnosis for the time frame indicated by the timing relationships.</td>
<td>• Anatomical Location Site&lt;br&gt;• Laterality&lt;br&gt;• Negation Rationale&lt;br&gt;• Ordinality&lt;br&gt;• Patient Preference&lt;br&gt;• Provider Preference&lt;br&gt;• Severity&lt;br&gt;• Start Datetime&lt;br&gt;• Stop Datetime</td>
</tr>
<tr>
<td>Diagnosis, Family History</td>
<td>To meet criteria using this datatype, the diagnosis indicated by the Condition/Diagnosis/Problem QDM category and its corresponding value set should reflect a diagnosis of a family member.</td>
<td>• Negation Rationale&lt;br&gt;• Ordinality&lt;br&gt;• Patient Preference&lt;br&gt;• Provider Preference&lt;br&gt;• Severity&lt;br&gt;• Start Datetime&lt;br&gt;• Status&lt;br&gt;• Stop Datetime</td>
</tr>
<tr>
<td>Diagnosis, Inactive</td>
<td>To meet criteria using this datatype, the diagnosis indicated by the Condition/Diagnosis/Problem QDM category and its corresponding value set should reflect documentation of an inactive diagnosis. Keep in mind that when this datatype is used with timing relationships, the criterion is looking for an inactive diagnosis for the time frame indicated by the timing relationships.</td>
<td>• Anatomical Location Site&lt;br&gt;• Negation Rationale&lt;br&gt;• Ordinality&lt;br&gt;• Patient Preference&lt;br&gt;• Provider Preference&lt;br&gt;• Severity&lt;br&gt;• Start Datetime&lt;br&gt;• Stop Datetime</td>
</tr>
</tbody>
</table>
Example: QDM in eMeasure

Data criteria (QDM Data Elements)

- "Diagnosis, Active: Atrial Fibrillation/Flutter" using "Atrial Fibrillation/Flutter Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.262)"
- "Diagnosis, Active: Hemorrhagic Stroke" using "Hemorrhagic Stroke Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.212)"
- "Diagnosis, Active: Ischemic Stroke" using "Ischemic Stroke Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.247)"
- "Diagnosis, Inactive: Atrial Fibrillation/Flutter" using "Atrial Fibrillation/Flutter Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.202)"
- "Encounter, Performed: Emergency Department Visit" using "Emergency Department Visit SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.292)"
- "Encounter, Performed: Non-Elective Inpatient Encounter" using "Non-Elective Inpatient Encounter SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.424)"
- "Intervention, Order: Palliative Care" using "Palliative Care SNOMED-CT Value Set (2.16.840.1.113883.3.526.2.1.1076)"
- "Intervention, Performed: Palliative Care" using "Palliative Care SNOMED-CT Value Set (2.16.840.1.113883.3.526.2.1.1076)"
- "Medication, Discharge not done: Medical Reason" using "Medical Reason SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.473)"
- "Medication, Discharge not done: Patient Refusal" using "Patient Refusal SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.93)"
- "Medication, Discharge: Anticoagulant Therapy" using "Anticoagulant Therapy RxNorm Value Set (2.16.840.1.113883.3.117.1.7.1.200)"
- "Patient Characteristic: Birthdate: birth date" using "birth date LOINC Value Set (2.16.840.1.113883.3.560.100.4)"
- "Procedure, Performed: Atrial Ablation" using "Atrial Ablation Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.203)"

- Attribute: "Ordinarily Principal Diagnosis" using "Principal Diagnosis SNOMED-CT Value Set (2.16.840.1.113883.3.117.2.7.1.14)"
- Attribute: "Discharge status: Patient Expired" using "Patient Expired SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.309)"
- Attribute: "Discharge status: Discharged To Another Hospital" using "Discharge To Another Hospital SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.307)"
- Attribute: "Discharge status: Discharged to Health Care Facility for Hospice Care" using "Discharged to Health Care Facility for Hospice Care SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.207)"
- Attribute: "Discharge status: Discharged to Home for Hospice Care" using "Discharged to Home for Hospice Care SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.209)"
- Attribute: "Discharge status: Left Against Medical Advice" using "Left Against Medical Advice SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.300)"

Reporting Stratification

- None

Supplemental Data Elements

- "Patient Characteristic: Ethnicity" using "Ethnicity CDC Value Set (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic: Payer: Payer" using "Payer Source of Payment Typology Value Set (2.15.840.1.114222.4.11.3591)"
- "Patient Characteristic: Race: Race" using "Race CDC Value Set (2.16.840.1.114222.4.11.036)"
- "Patient Characteristic: Sex: ONC Administrative Sex" using "ONC Administrative Sex Administrative Sex Value Set (2.16.840.1.113762.1.4.1)"
QDM and Template Association

Each QDM Datatype maps to a unique HQMF XML “pattern”.

This unique pattern is present in the eMeasure.

Each QDM Datatype is mapped to a corresponding QRDA I XML pattern.

This QRDA XML is present in the patient level report.
QDM Across Standards

QDM Quality Datatype
Defines what the data looks like

HQMF R2 XML
Query the data

QRDA I XML
Report the data

Datatype maps across HQMF and QRDA
Analogies that may help*

Phrase Book

• QDM = all chapters/categories in a foreign language phrase book, e.g. Greetings
• HQMF = “How are you?” (Question)
• QRDA = “Fine, thank you!” (Response)

Food

• QDM = Different food, soups, salads, desserts etc.
• HQMF = Menu to order Tomato Soup (Question)
• QRDA = prepared Tomato Soup (Response)

Airplanes?

*not guaranteed
## Example Mapping Table

<table>
<thead>
<tr>
<th>Quality Data Type</th>
<th>QDM-HQMF R2 Template Name</th>
<th>QDM-HQMF R2 Template ID</th>
<th>QDM-HQMF R1 Template ID</th>
<th>CDA (QRDA) Template ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Goal</td>
<td>Care Goal (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.7</td>
<td>2.16.840.1.11388 3.3.560.1.9</td>
<td>2.16.840.1.11388 3.10.20.24.3.1</td>
</tr>
<tr>
<td>Communication: From Patient to Provider</td>
<td>Communication: From Patient to Provider (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.8</td>
<td>2.16.840.1.11388 3.3.560.1.30</td>
<td>2.16.840.1.11388 3.10.20.24.3.2</td>
</tr>
<tr>
<td>Communication: From Provider to Patient</td>
<td>Communication: From Provider to Patient (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.9</td>
<td>2.16.840.1.11388 3.3.560.1.31</td>
<td>2.16.840.1.11388 3.10.20.24.3.3</td>
</tr>
<tr>
<td>Communication: From Provider to Provider</td>
<td>Communication: From Provider to Provider (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.10</td>
<td>2.16.840.1.11388 3.3.560.1.29</td>
<td>2.16.840.1.11388 3.10.20.24.3.4</td>
</tr>
<tr>
<td>Device, Adverse Event</td>
<td>Device, Adverse Event (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.11</td>
<td>2.16.840.1.11388 3.3.560.1.34</td>
<td>2.16.840.1.11388 3.10.20.24.3.5</td>
</tr>
<tr>
<td>Device, Allergy</td>
<td>Device, Allergy (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.12</td>
<td>2.16.840.1.11388 3.3.560.1.35</td>
<td>2.16.840.1.11388 3.10.20.24.3.6</td>
</tr>
<tr>
<td>Device, Applied</td>
<td>Device, Applied (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.13</td>
<td>2.16.840.1.11388 3.3.560.1.10</td>
<td>2.16.840.1.11388 3.10.20.24.3.7</td>
</tr>
<tr>
<td>Device, Intolerance</td>
<td>Device, Intolerance (HQMF R2)</td>
<td>2.16.840.1.11388 3.10.20.28.3.14</td>
<td>2.16.840.1.11388 3.3.560.1.36</td>
<td>2.16.840.1.11388 3.10.20.24.3.8</td>
</tr>
</tbody>
</table>
QDM-Based QRDA I

Clinical measureable parameters are assembled into quality measures, which are then expressed as eMeasures.

The eMeasures guide the collection of EHR data and other data, which are then assembled into QRDA quality reports and submitted to quality or other organizations.

While there is no prerequisite that a QRDA document must be generated based on an eMeasure, the QDM-based QRDA standard tightly aligns with HQMF.
Create a QRDA-I Instance

**eMeasure Data Elements**
- eMeasures are comprised of the data elements that are required to compute them
- Identify QDEs in the referenced eMeasure(s)
- Example: Medication Administered - Aspirin

Find matching data elements in a patient chart
- Specification calls this “scooping”
- Example: Find all medications administered for a patient

Filter the data to the relevant elements
- Example: Only place administrations of Aspirin in the QRDA-I document
- This happens by matching clinical codes
- Specification calls this “smoking gun”

Repeat for all QDEs in the referenced eMeasure(s)
Extract Relevant Data Elements from EHR

- Scoop and Filter: QRDA-I sends what is in the electronic health record (EHR). If there’s nothing in the EHR, don’t send anything in the QRDA-I*.

- Smoking Gun: At a minimum, the QRDA-I should include the positive evidence.*

* eMeasure performance rates are calculated based on a principle of “positive evidence.”
### Example: Healthy Term Newborn CMS 185

**eMeasure**

<table>
<thead>
<tr>
<th>eMeasure Title</th>
<th>Healthy Term Newborn</th>
</tr>
</thead>
<tbody>
<tr>
<td>eMeasure Identifier</td>
<td>105</td>
</tr>
<tr>
<td>eMeasure Version number</td>
<td>2</td>
</tr>
<tr>
<td>NQF Number</td>
<td>0716</td>
</tr>
<tr>
<td>GUID</td>
<td>ff796f69-f99d-41fd-b8c2-570a59a5d8d</td>
</tr>
</tbody>
</table>

**QDM-based QRDA**

#### QRDA Incidence Report

- **Patient**: Mr. Adam Everyman
- **Date of birth**: March 1, 2012
- **Sex**: Male
- **Contact info**: Primary Home: 17 Davis Rd., Blue Bell, PA 19422, US  
  Tel: (781)555-1212
- **Date Created**: December 31, 2012, 00:00 -0400
- **Author**: Good Health Report Generator
- **Contact info**: 21 North Ave., Burlington, MA 02305, US  
  Tel: (203)555-1002

#### Table of Contents
- Measure Section
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#### Measure Section

<table>
<thead>
<tr>
<th>eMeasure Title</th>
<th>Version neutral identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Term Newborn</td>
<td>ff796f69-f99d-41fd-b8c2-570a59a5d8d</td>
<td>2</td>
<td>0716</td>
<td>40280281-32d7-5492-012d-8c2858ec193a</td>
</tr>
</tbody>
</table>
Example: Healthy Term Newborn CMS 185

Population criteria

- **Initial Patient Population =**
  - AND: "Diagnosis, Active: Gestational age >= 37 weeks" starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
  - AND: "Occurrence A of Encounter, Performed: Encounter Inpatient" starts during "Measurement Period"
  - AND: "Occurrence A of Encounter, Performed: Encounter Inpatient (length of stay <= 120 day(s))"
  - OR:
    - OR: "Diagnosis, Active: Single Liveborn Newborn Born in Hospital" starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
    - OR:
      - AND: "Diagnosis, Active: Single Live Birth" starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
      - AND: "Diagnosis, Active: Liveborn Born in Hospital" starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
  - AND: "Occurrence A of Encounter, Performed: Encounter Inpatient (reason: 'Birth')"

- **Denominator =**
  - AND: "Initial Patient Population"

- **Denominator Exclusions =**
  - AND:
    - OR: "Diagnosis, Active: Congenital Anomalies Group"
    - OR: "Diagnosis, Active: Laryngeal Stenosis Group"
    - OR: "Diagnosis, Active: Hydrops Group"
    - OR: "Diagnosis, Active: Hemolytic Disease Group"
    - OR: "Diagnosis, Active: Impaired Fetal Growth Group"
    - OR: "Diagnosis, Active: Newborn Affected by Placenta or Abruptio Placenta"
    - OR: "Diagnosis, Active: Drug Withdrawal Syndromes Group"
  - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"

- **Numerator =**
  - AND NOT:
    - OR: "Diagnosis, Active: Birth Trauma or Injuries Group"
    - OR: "Diagnosis, Active: Congenital or Infantile Cerebral Palsy Group"
    - OR: "Diagnosis, Active: Hypoxia or Asphyxia Group"
    - OR: "Diagnosis, Active: Infection Group"
    - OR: "Diagnosis, Active: Neurologic Complications Group"
    - OR: "Diagnosis, Active: Respiratory Problems Group"
    - OR: "Diagnosis, Active: Shock and Complications Group"
  - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
  - AND NOT:
    - OR: "Procedure, Performed: Arterial or Umbilical Venous Cath Group"
    - OR: "Procedure, Performed: Cardiopulmonary Resuscitation Group"
    - OR: "Procedure, Performed: TPN Procedure Group"
    - OR: "Procedure, Performed: Gastrostomy Group"
    - OR: "Procedure, Performed: Neurologic Procedure Group"
    - OR: "Procedure, Performed: Gavage Feeding Group"
    - OR: "Procedure, Performed: Respiratory Procedures Group"
  - during "Occurrence A of Encounter, Performed: Encounter Inpatient"
  - AND NOT:
    - OR: "Occurrence A of Encounter, Performed: Encounter Inpatient (discharge status: 'Discharge To Another Hospital')"
    - OR: "Occurrence A of Encounter, Performed: Encounter Inpatient (discharge status: 'Neonatal Death SM-CT')"
  - AND:
    - OR: "Occurrence A of Encounter, Performed: Encounter Inpatient (length of stay < 6 day(s))"
    - OR:
      - AND: "Occurrence A of Encounter, Performed: Encounter Inpatient (length of stay > 5 day(s))"
      - AND:
        - OR: "Procedure, Performed: Phototherapy Procedure Group" during "Occurrence A of Encounter, Performed: Encounter Inpatient"
        - OR:
          - OR: "Diagnosis, Active: Hyperbilirubinemia Group"
          - OR: "Diagnosis, Active: Social Reasons Group"
  - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"

- **Denominator Exceptions =**
  - None
Example: Healthy Term Newborn CMS 185

Data criteria (QDM Data Elements)

- "Diagnosis, Active: Birth Trauma or Injuries Group" using "Birth Trauma or Injuries Group Grouping Value Set (2.16.840.1.113883.3.666.5.1567)"
- "Diagnosis, Active: Congenital Anomalies Group" using "Congenital Anomalies Group Grouping Value Set (2.16.840.1.113883.3.666.5.1570)"
- "Diagnosis, Active: Congenital or Infantile Cerebral Palsy Group" using "Congenital or Infantile Cerebral Palsy Group Grouping Value Set (2.16.840.1.113883.3.666.5.1580)"
- "Diagnosis, Active: Drug Withdrawal Syndrome Group" using "Drug Withdrawal Syndrome Group Grouping Value Set (2.16.840.1.113883.3.666.5.1574)"
- "Diagnosis, Active: Gestational age >= 37 weeks" using "Gestational age >= 37 weeks Grouping Value Set (2.16.840.1.113883.3.666.5.1596)"
- "Diagnosis, Active: Hemolytic Disease Group" using "Hemolytic Disease Group Grouping Value Set (2.16.840.1.113883.3.666.5.1571)"
- "Diagnosis, Active: Hydrops Group" using "Hydrops Group Grouping Value Set (2.16.840.1.113883.3.666.5.1573)"
- "Diagnosis, Active: Hyperbilirubinemia Group" using "Hyperbilirubinemia Group Grouping Value Set (2.16.840.1.113883.3.666.5.1593)"
- "Diagnosis, Active: Hypoxia or Asphyxia Group" using "Hypoxia or Asphyxia Group Grouping Value Set (2.16.840.1.113883.3.666.5.1577)"
- "Diagnosis, Active: Impaired Fetal Growth Group" using "Impaired Fetal Growth Group Grouping Value Set (2.16.840.1.113883.3.666.5.1566)"
- "Diagnosis, Active: Infection Group" using "Infection Group Grouping Value Set (2.16.840.1.113883.3.666.5.1590)"
- "Diagnosis, Active: Laryngeal Stenosis Group" using "Laryngeal Stenosis Group Grouping Value Set (2.16.840.1.113883.3.666.5.1576)"
- "Diagnosis, Active: Liveborn Born In Hospital" using "Liveborn Born In Hospital SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.29)"
- "Diagnosis, Active: Neurologic Complications Group" using "Neurologic Complications Group Grouping Value Set (2.16.840.1.113883.3.666.5.1591)"
- "Diagnosis, Active: Newborn Affected by Placenta or Abruption Group" using "Newborn Affected by Placenta or Abruption Group Grouping Value Set (2.16.840.1.113883.3.666.5.1568)"
- "Diagnosis, Active: Respiratory Problems Group" using "Respiratory Problems Group Grouping Value Set (2.16.840.1.113883.3.666.5.1588)"
- "Diagnosis, Active: Shock and Complications Group" using "Shock and Complications Group Grouping Value Set (2.16.840.1.113883.3.666.5.1581)"
- "Diagnosis, Active: Single Live Birth" using "Single Live Birth SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.25)"
- "Diagnosis, Active: Single Liveborn Newborn Born in Hospital" using "Single Liveborn Newborn Born in Hospital Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.26)"
- "Diagnosis, Active: Social Reasons Group" using "Social Reasons Group Grouping Value Set (2.16.840.1.113883.3.666.5.1595)"
- "Encounter, Performed: Encounter Inpatient" using "Encounter Inpatient SNOMED-CT Value Set (2.16.840.1.113883.3.666.5.307)"
- "Procedure, Performed: Arterial or Umbilical Venous Cath Group" using "Arterial or Umbilical Venous Cath Group Grouping Value Set (2.16.840.1.113883.3.666.5.1582)"
Example: Healthy Term Newborn CMS 185

Data criteria (QDM Data Elements)

- "Diagnosis, Active: Birth Trauma or Injuries Group" using "Birth Trauma or Injuries Group Grouping Value Set (2.16.840.1.113883.3.666.5.1567)"
- "Diagnosis, Active: Congenital Anomalies Group" using "Congenital Anomalies Group Grouping Value Set (2.16.840.1.113883.3.666.5.1570)"
- "Diagnosis, Active: Congenital or Infantile Cerebral Palsy Group" using "Congenital or Infantile Cerebral Palsy Group Grouping Value Set (2.16.840.1.113883.3.666.5.1580)"
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- "Diagnosis, Active: Newborn Affected by Placenta or Abruption Group" using "Newborn Affected by Placenta or Abruption Group Grouping Value Set (2.16.840.1.113883.3.666.5.1568)"
- "Diagnosis, Active: Respiratory Problems Group" using "Respiratory Problems Group Grouping Value Set (2.16.840.1.113883.3.666.5.1588)"
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- "Diagnosis, Active: Single Liveborn Newborn Born in Hospital" using "Single Liveborn Newborn Born in Hospital Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.26)"
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- "Encounter, Performed: Encounter Inpatient" using "Encounter Inpatient SNOMED-CT Value Set (2.16.840.1.113883.3.666.5.307)"
- "Procedure, Performed: Arterial or Umbilical Venous Cath Group" using "Arterial or Umbilical Venous Cath Group Grouping Value Set (2.16.840.1.113883.3.666.5.1582)"
Example: Healthy Term Newborn CMS 185

QDE found in EHR

Diagnosis, Active: Gestational age >= 37 weeks using Gestational age >= 37 weeks Grouping Value Set (2.16.840.1.113883.3.666.5.1596)
Encounter, Performed: Encounter Inpatient using Encounter Inpatient SNOMED-CT Value Set (2.16.840.1.113883.3.666.5.307)
Diagnosis, Active: Liveborn Born In Hospital using Liveborn Born In Hospital SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.29)
Diagnosis, Active: Single Live Birth using Single Live Birth SNOMED-CT Value Set (2.16.840.1.113883.3.117.1.7.1.25)
Diagnosis, Active: Single Liveborn Newborn Born in Hospital" using "Single Liveborn Newborn Born in Hospital Grouping Value Set (2.16.840.1.113883.3.117.1.7.1.26)
Patient Characteristic Payer using Payer Source of Payment Typology Value Set (2.16.840.1.113883.3.560.101.1“)

QDM-based QRDA Patient Data Section

Patient Data

<table>
<thead>
<tr>
<th>Data Element - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounter Performed: In-Patient</td>
</tr>
<tr>
<td>Patient Characteristic Payer: Payer - Kaiser MR ID 0018786622</td>
</tr>
<tr>
<td>Diagnosis, Active: Liveborn Born In Hospital</td>
</tr>
<tr>
<td>Diagnosis, Active: Single Live Birth</td>
</tr>
<tr>
<td>Diagnosis, Active: SINGLE LB IN-HOSP W/O CS</td>
</tr>
<tr>
<td>Diagnosis, Active: 37+ comp wks gestation</td>
</tr>
</tbody>
</table>
### Example: Healthy Term Newborn CMS 185

#### QRDA Incidence Report

<table>
<thead>
<tr>
<th>Patient</th>
<th>Adam Asplundh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>March 1, 2012</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
</tr>
<tr>
<td>Contact info</td>
<td>Primary Home: 17 Days Rd., Blue Bell, MA 02368, US Tel: (781)555-1212</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document Id</th>
<th>f2d5971-d67e-449c-96e3-213f01331ce4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document Created</td>
<td>December 31, 2012, 00:00 - 0400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Author</th>
<th>Good Health Report Generator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact info</td>
<td>21 North Ave., Burlington, MA 02368, US Tel: (555)555-1003</td>
</tr>
<tr>
<td>Legal authenticator</td>
<td>Henry Seven signed at December 31, 2012, 00:00 - 0400</td>
</tr>
<tr>
<td>Contact info</td>
<td>21 North Ave., Burlington, MA 02368, US Tel: (555)555-1003</td>
</tr>
<tr>
<td>Document maintained by</td>
<td>Good Health Clinic</td>
</tr>
<tr>
<td>Contact info</td>
<td>Work Place: 17 Days Rd., Blue Bell, MA 02368, US Tel: (555)555-1212</td>
</tr>
</tbody>
</table>

#### Table of Contents

- Measure Section
- Reporting Parameters
- Fainess Data

#### Measure Section

<table>
<thead>
<tr>
<th>eMeasure Title</th>
<th>Version neutral identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Term Newborn</td>
<td>799650-9996-4166-8642-57610334986d8b8</td>
<td>2</td>
<td>0716</td>
<td>402082851-3d6-5493-9138-5c288ae1933</td>
</tr>
</tbody>
</table>

#### Reporting Parameters

- Reporting period: 01 Jan 2012 - 31 Dec 2012

#### Patient Data

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounter Performed</td>
<td>In-Patient (LOS = 1 day) (reason: birth)</td>
</tr>
<tr>
<td>Patient Characteristic Payer</td>
<td>Kaiser</td>
</tr>
<tr>
<td>Diagnosis, Active: Liveborn Born In Hospital</td>
<td></td>
</tr>
<tr>
<td>Diagnosis, Active: Single Live Birth</td>
<td></td>
</tr>
<tr>
<td>Diagnosis, Active: SINGLE LD IN-HOSP W/O C3</td>
<td></td>
</tr>
<tr>
<td>Diagnosis, Active: 37+ comp wks gestation</td>
<td></td>
</tr>
</tbody>
</table>
QRDA Category III
What is QRDA Category III (QRDA-III)?

A way of expressing aggregated calculation data for a Clinical Quality Measure (CQM) calculation.

Just the results; no patient data included

Contains data for one or more Measures

XML document (CDA-based)
QRDA-III Document

A QRDA-III* document is an aggregate quality report that contains calculated summary data for one or more measures for a specified population of patients within a particular health system over a specific period of time.

Refers to identifiers in an eMeasure or other query.

Communicates data residing in health information systems that are stripped of all patient identifiers, protecting patients and healthcare providers from the risks of inadvertent leakage of private information.

* Category III was published November 2012 and is required in Meaningful Use Stage 2 (MU2) § 170.205(k).
QRDA-III Report

Reporting Parameters Section

Measure Section
QRDA-III – Aggregate Report

Table of Contents
- Reporting Parameters
- Measure Section

Reporting Parameters
- Reporting period: 01 January 2012 - 31 March 2012
- First encounter: 05 January 2012
- Last encounter: 24 March 2012

Measure Section

<table>
<thead>
<tr>
<th>eMeasure Title</th>
<th>Version neutral identifier</th>
<th>eMeasure Version Number</th>
<th>NQF eMeasure Number</th>
<th>eMeasure Identifier (MAT)</th>
<th>Version specific identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticoagulation Therapy for Atrial Fibrillation/Flutter</td>
<td>03876469-0854-d1e5-a96-9924171040c2</td>
<td>1</td>
<td>0436</td>
<td>71</td>
<td>8a4d03b2-3887-5d73-513c-613b0a87524a</td>
</tr>
</tbody>
</table>

Member of Measure Set: Clinical Quality Measure Set 2011 - 2012 · b6ac12e2-beb8-4ef7-94ed-fcc397406cd8

- Performance Rate: 83% (Predicted = 62%)
- Reporting Rate: 84%
- Initial Patient Population: 1000
  - Male: 400
  - Female: 600
  - Not Hispanic or Latino: 350
  - Hispanic or Latino: 650
  - Black: 200
  - White: 350
  - Asian: 250
  - Payer - Medicare: 250
  - Payer - Medicaid: 550
  - Zipcode 92543: 15

- Denominator: 550
  - Male: 200
  - Female: 300
  - Not Hispanic or Latino: 175
  - Hispanic or Latino: 375
  - Black: 150
  - White: 175
  - Asian: 175
  - Payer - Medicare: 125
  - Payer - Medicaid: 275
  - Zipcode 92543: 15

- Numerator: 400 (predicted=300)
  - Male: 100
  - Female: 300
  - Not Hispanic or Latino: 140
  - Hispanic or Latino: 260
  - Black: 120
  - White: 140
  - Asian: 140
  - Payer - Medicare: 100
  - Payer - Medicaid: 220
  - Zipcode 92543: 5

- Denominator Exclusions: 20
  - Male: 8
Anatomy of a QRDA-III Document

- **Document Header**
  - Information pertaining to the Organization, Author, Custodian …. of the report. Record Target is nulled.

- **Reporting Parameters Section**
  - Any parameters used to generate the document
  - Typically just the measurement period.

- **Measures Section**
  - 1-* Measure Reference and Results
Header Requirements

QRDA-III is designed for reporting aggregate data about any quality measure.

The QRDA-III report format matches the QRDA-I report where appropriate.

RecordTarget is a required element in CDA.

QRDA-III reports data on groups of patients, thus the recordTarget ID contains a nullFlavor.
QRDA-III Reporting Parameters Section

• Conforms to QRDA-I Reporting Parameters section

• Contains Reporting Parameters and information
QRDA-III Measure Section

Conforms to QRDA-I Measure section

Contains Measure Reference and Results including:

• Measure Data
• Performance Rate for Proportion Measure
CMS QRDA IG
CMS QRDA Implementation Guide

An implementation guide based on QRDA I and III

Defines program-specific submission requirements

Designed for a specific submission year, e.g. 2015
CMS QRDA IG: Layering of Requirements
CDA is an XML standard for building any Clinical document

QRDA is a type of CDA document for quality reporting
  • QRDA I (Patient-Level Report)
  • QRDA III (Aggregate Report)

QDM provides the common data elements for all eCQMs
  • Connects eCQM calculation with eCQM reporting

CMS publishes its own QRDA implementation guide
  • Enforces CMS’ quality reporting program requirements