



# **Review of Draft QDM v5.0 for CQL Measure Developers**

**Thursday August 18, 2016  
4:00-5:00 PM EDT**

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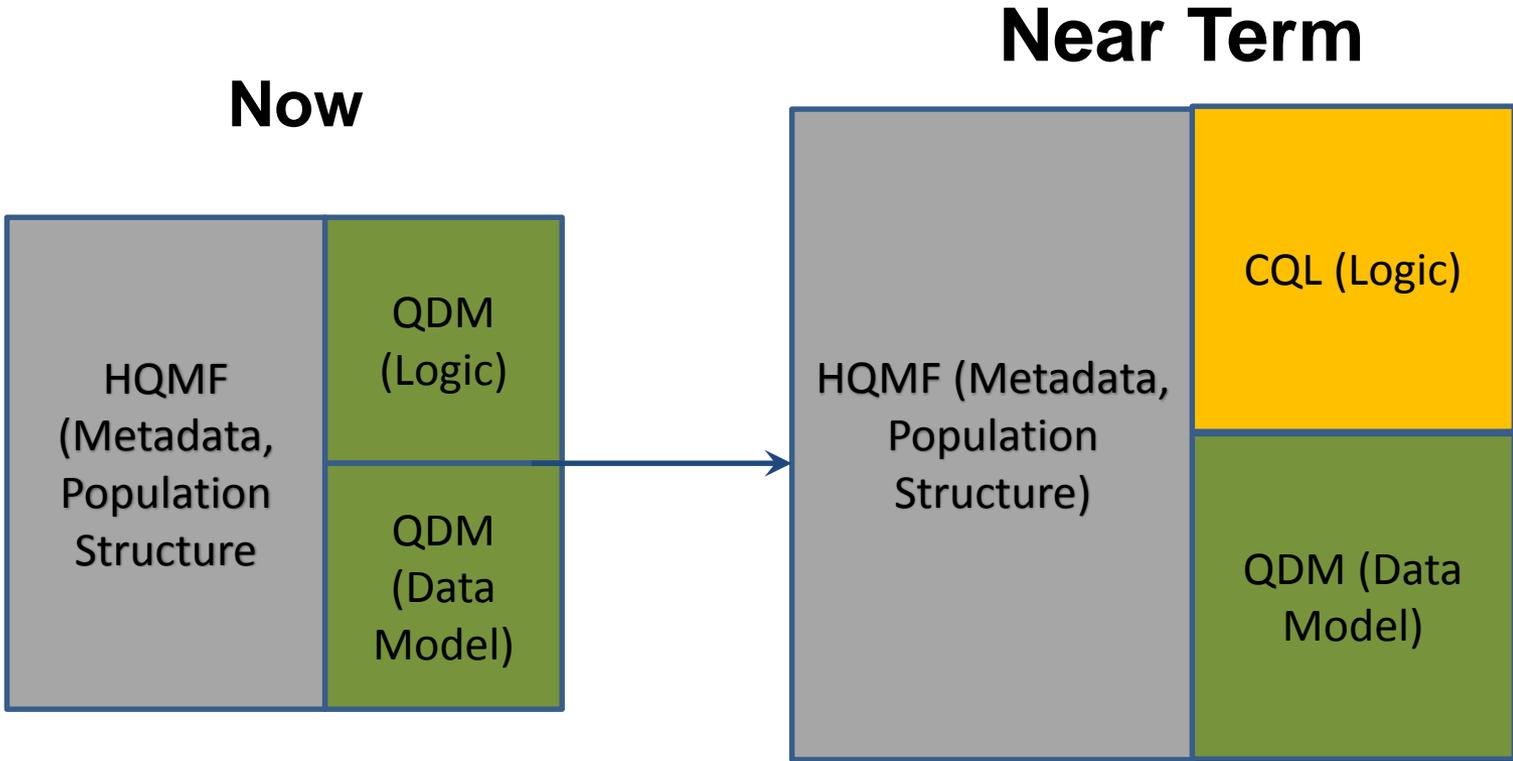
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# Agenda

- CQL-QDM Overview and Announcements
- QDM 4.3
- QDM 5.0 Changes
- QDM 5.0 Timing Period(s)
- Q&A
- Conclusion

# Evolving eCQM Standards



**Definitions:**

**HQMF** – Health Quality Measure Format

**CQL** – Clinical Quality Language

**QDM** – Quality Data Model

# Differences Between the Quality Data Model (QDM) Now and When using Clinical Quality Language (CQL)

## QDM Now

- Data Model and Logic are both in the QDM

## QDM with CQL

- The Data Model will continue to exist as the QDM
- CQL will provide the logic expressions and will replace that function currently in the QDM

# Proposed Timeline For Updating Standards

**Work Effort:** 2016 through Fall 2017

Fall 2017 +

## Measures using QDM v4.2 & HQMF 2.1

Measure Development

- 2015
- 2016

## Testing CQL – QDM – HQMF 2.1

Testing and Development

- Measure Developers
- Implementers & Vendors
- CQL Training/Education
- Measure Authoring Tool
- Bonnie & Cypress
- Quality Data Model
- Integration Testing
- Feedback Loops

## Testing eCQM using CQL - – QDM – HQMF 2.1

Measure Development and Testing in a simulated environment

- Starts 2017

# Announcements

- DRAFT QDM 5.0 for measure developer testing CQL is available on the [eCQI Resource Center](#)

# QDM 4.3

## Remove

1. Functional Status, Performed
2. Functional Status, Recommended
3. Functional Status, Order
4. Risk Category Assessment

## Add

1. Assessment, Performed
2. Assessment, Recommended

*Assessment* is a resource used to define specific observations that clinicians use to guide treatment of the patient. An assessment can be a single question, or observable entity with an expected response, an organized collection of questions intended to solicit information from patients, providers or other individuals, or a single observable entity that is part of such a collection of questions.

# QDM 4.3

## 1. Assessment, Performed – *Attributes*

- Author time
- Negation Rationale
- Reason
- Method
- Result (allow datetime as a result response type; add percentage as a result response type)
- Code

## 2. Assessment, Recommended – *Attributes*

- Author time
- Negation Rationale
- Reason
- Method
- Code

# DRAFT QDM 5.0

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# QDM 5.0 – Negation Rationale

1. **Retain Negation Rationale as an attribute for existing datatypes**
2. **Change syntax slightly**
  - From: “Procedure, Performed Not Done: *Procedure* (negation rationale: *value set*)
  - To: “Procedure, *Not* Performed: *Procedure* (negation rationale: *value set*)
3. **CQL to Expression Logical Model (ELM) Model Info to address the change. No change to QDM model**

Reference: <https://github.com/esacinc/CQL-Formatting-and-Usage-Wiki/wiki/Negation-in-QDM>

# QDM 5.0 – Negation Rationale

- Assessment, Performed
- Assessment, Recommended
- Communication: From Patient to Provider
- Communication: From Provider to Patient
- Communication: From Provider to Provider
- Device, Applied
- Device, Order
- Device, Recommended
- Diagnostic Study, Order
- Diagnostic Study, Performed
- Diagnostic Study, Recommended
- Encounter, Order
- Encounter, Performed
- Encounter Recommended
- Immunization, Administered
- Immunization, Order
- Intervention, Order
- Intervention, Performed
- Intervention, Recommended
- Laboratory Test, Order
- Laboratory Test, Performed
- Laboratory Test, Recommended
- Medication, Administered
- Medication, Discharge
- Medication, Dispensed
- Medication, Order
- Physical Exam, Order
- Physical Exam, Performed
- Physical Exam, Recommended
- Procedure, Order
- Procedure, Performed
- Procedure, Recommended
- Substance, Administered
- Substance, Order
- Substance, Recommended

# QDM 5.0 – Care Goal Target Outcome

- Allow “percentage” as a result response type for the attribute “Target Outcome”

# QDM 5.0 – Transfer to, Transfer from

1. **Remove Transfer to, Transfer from datatypes**
2. **Add one new attribute to Encounter, Performed**
  - **New** – Admission Source (to cover Transfer from)
  - Already present (to cover Transfer to)
    - Discharge Status – “The disposition of the patient at the time of discharge.” (uses disposition C-CDA Template)
    - **Change name** to Discharge Disposition
3. **Current Use:**
  - Transfer from                      12 Measures
  - Transfer to                            13 Measures
4. **Rationale:** “Transfer from” and “Transfer to” datatypes express reasons for excluding a patient from a measure because of source or destination that would be a reason not to follow through with the numerator actions.
5. **Intra-facility transfers** (e.g., ICU to Step-down) still require logic comparing times of arrival and departure from relevant locations

# QDM 5.0 – Datatype Codes

- In prior QDM versions, QDM datatypes implicitly refer to attributes about a set of items that are included in a value set. QDM did not state that the datatype attributes only refer to a specific item that is a member of the value set. To work with CQL, QDM needs to explicitly specify the value set filter for the code.
- Every QDM datatype includes a new attribute: Code
  - Description = the single code or a member of the value set used to represent the quality data element.
- Measure developers do not need to create any new item within the MAT.

# QDM 5.0 – Cumulative Medication Duration (CMD)

## QDM 4.3 Definitions:

- **Medication, Order:** CMD represents the intended number of medication days, based on the metadata of the order. Refills are taken into account.
- **Medication, Active:** CMD represents the same information as for Medication, Order.
- **Medication, Dispensed:** CMD represents the number of medication days available in the supply that was dispensed (i.e., picked up). Only actual dispenses should be taken into account.
- **Medication, Administered:** CMD represents the number of days for which an individual was actually administered the medicine, regardless of the supply in the order or dispense.

# QDM 5.0 – Cumulative Medication Duration

## Remove Cumulative Medication Duration (attribute)

- Cumulative medication duration is actually derived from other data.
- CQL provides an opportunity to express logic to define cumulative medication duration and provide greater clarity than the QDM 4.3 attribute.

# QDM 5.0 – Medication Attributes

- **Frequency**
- **Dosage**
  - QDM 4.3 mapped “dosage” to the # doses supplied but it could have a second meaning – “quantity to be taken at a single administration”
  - Update description to “quantity to be taken at a single administration”
  - Datatypes: Medication, Active; Medication, Administered; Medication, Dispensed; Medication, Order; Medication, Discharge
- **Supply – New** – to define “The quantity (amount) of therapeutic agent that was provided to a patient (i.e., number of doses, number of tablets or pills, volume of medication)”

# QDM 5.0 – Medication Attributes

## Frequency Definition, by Datatype:

Medication Active

How frequently the medication is administered to a patient for an active medication

Medication, Administered  
Substance, Administered

How frequently the medication or substance was administered to the patient

Medication, Discharge  
Medication, Dispensed  
Medication, Order  
Substance, Order

How frequently the medication should be taken by or administered to the patient

Substance, Recommended

How frequently the substance is recommended to be given to the patient

# QDM 5.0 – Medication Attributes

**Supply Definition, by Datatype:** The quantity (amount) of therapeutic agent that was provided to a patient (i.e., number of doses, number of tablets or pills, volume of medication)

Medication Active	Quantity used while the patient was on the given medication
Immunization, Administered Medication, Administered Substance, Administered	Quantity actually administered to the patient
Medication, Discharge	Quantity indicated to be given
Medication, Dispensed	Quantity to be dispensed to a patient to be taken at a later time
Immunization, Order Medication, Order Substance, Order	Quantity to be given to a patient
Substance, Recommended	Quantity recommended to be taken or administered to a patient

# QDM 5.0 Allergy & Intolerance/Adverse Reaction

- **Remove existing allergy, intolerance and adverse reaction/event datatypes**
- **Add 2 new datatypes**
  - **Allergy** – *Allergy is used to address immune-mediated reactions to a substance such as type 1 hypersensitivity reactions, other allergy-like reactions, including pseudo-allergy.*
  - **Intolerance/Adverse Reaction** – *Adverse Event / Intolerance is used to define non-immune adverse reactions that are not determined or perceived to be allergic or "allergy-like," and are to some degree idiosyncratic and/or individually specific [i.e., are not a reaction that is expected to occur with most or all patients given similar circumstances].*
  - **For each, attributes of**
    - Substance
    - Type
    - Severity
    - Prevalence Period
    - Onset dateTime
    - Abatement dateTime (resolution)

# QDM 5.0 Timing Period(s) – Relevant Period - Referential

QDM Datatype	Parameters for Referential Relevant Period
Care Goal	<i>startTime</i> = when the goal should be effective (when recorded) <i>stopTime</i> = when the target outcome is expected to occur

# QDM 5.0 – Timing Period(s) – Relevant Period - Measured

QDM	Parameters for Measured Relevant Period
Device, Applied	<i>startTime</i> = when the device is inserted or first used; <i>stopTime</i> = when the device is removed or last used
Diagnostic Study, Performed	<i>startTime</i> = when the diagnostic study is initiated; <i>stopTime</i> = when the diagnostic study is completed  ADD – <i>result dateTime</i> – the time the result becomes available in the clinical software
Encounter, Active	<i>startTime</i> = the time the encounter begins (admission time); <i>stopTime</i> = the the time encounter completes (discharge time)
Encounter, Performed	<i>startTime</i> = the time the encounter begins (admission time); <i>stopTime</i> = the the time encounter completes (discharge time)
Patient Characteristic, Payer	<i>startTime</i> = the first day of insurance coverage with the referenced payer; <i>stopTime</i> = the last day of insurance coverage with the referenced payer
Patient Characteristic, Clinical Trial	<i>startTime</i> = the time the patient begins in the clinical trial <i>stopTime</i> = the time the clinical trial completes for the patient
Intervention, Performed	<i>startTime</i> = the time the intervention begins; <i>stopTime</i> = the time the intervention completes NOTE - timing refers to a single instance of an intervention. If a measure seeks to evaluate multiple interventions over a period of time, the measure developer should use CQL logic to represent the query request.

# QDM 5.0 – Timing Period(s) – Relevant Period - Measured

QDM	Parameters for Measured Relevant Period
Laboratory Test, Performed	<p><i>startTime</i> = the time the laboratory test begins (i.e., the time the specimen is collected);  <i>stopTime</i> = the time the laboratory test procedure completes (i.e., the time the final report is documented)</p> <p>ADD – <i>result dateTime</i> – the time the result becomes available in the clinical software</p>
Medication, Active	<p><i>startTime</i> = when the medication is first known to be used (generally the time of entry on the medication list);  <i>stopTime</i> = when the medication discontinues (generally the time discontinuation is recorded on the medication list)</p>
Medication, Administered	<p><i>startTime</i> = when a single medication administration event begins (e.g., the initiation of an intravenous infusion, or administering a pill or IM injection to a patient);  <i>stopTime</i> = when a single medication administration event completes (e.g., the end time of the intravenous infusion, or the administration of a pill or IM injection is completed - for pills and IM injections, the start and stop times are the same)</p>
Physical Exam, Performed	<p><i>startTime</i> = the time the physical examination activity begins  <i>stopTime</i> = the time the physical examination activity completes</p> <p>NOTE - timing refers to a single instance of a physical examination activity. If a measure seeks to evaluate multiple physical examination activities over a period of time, the measure developer should use CQL logic to represent the query request.</p>

# QDM 5.0 – Timing Period(s) – Relevant Period - Measured

QDM	Parameters for Measured Relevant Period
Procedure, Performed	<p><i>startTime</i> = the time the procedure begins;  <i>stopTime</i> = the time the procedure completes            NOTE - Timing refers to a single instance of an procedure. If a measure seeks to evaluate multiple procedures over a period of time, the measure developer should use CQL logic to represent the query request.</p>
Substance, Administered	<p><i>startTime</i> = when a single substance administration event begins (e.g., the initiation of an intravenous infusion, or administering a the substance orally or topically to a patient);  <i>stopTime</i> = when a single substance administration event completes (e.g., the end time of the intravenous infusion, or the administration of a substance orally or topically is completed - for oral or topical administration, the start and stop times are the same)</p>

# QDM 5.0 – Timing Period(s) – Relevant Period – Special Case

QDM	Parameter for Special Case Relevant Period
<b>1) LocationPeriod</b>	
Encounter, Active	<i>startTime</i> = the time the patient arrives at the location;
Encounter, Performed	<i>stopTime</i> = the time the patient departs from the location

# QDM 5.0 – Timing Period(s) – Prevalence Period

- **Prevalence Period Parameters:**
  - Onset DateTime
  - Abatement DateTime
- **Prevalence Period Used for:**
  - Diagnosis
  - Allergy
  - Intolerance / Adverse Event
  - Symptom

# QDM 5.0 – Timing Period(s) – Author Time

## Author Time: Time documented (single point in time)

1. Patient Care Experience
2. Provider Care Experience
3. Communication: from Patient to Provider
4. Communication: from Provider to Patient
5. Communication: from Provider to Provider
6. Care Goal
7. Device, Order
8. Device, Recommended
9. Diagnostic Study, Order
10. Encounter, Order
11. Encounter, Recommended
12. Assessment, Performed
13. Assessment, Recommended
14. Immunization, Administered
15. Immunization, Order
16. Patient Characteristic
17. Provider Characteristic
18. Intervention, Order
19. Intervention, Recommended
20. Laboratory Test, Order
21. Laboratory Test, Recommended
22. Medication, Discharge
23. Medication, Dispensed
24. Medication, Order
25. Physical Exam, Order
26. Physical Exam, Recommended
27. Procedure, Order
28. Procedure, Recommended
29. Substance, Order
30. Substance, Recommended
31. Patient Care Experience

# QDM 5.0 - Timing Period(s) – Author Time

## Author Time: Additional Explanatory Descriptions

- 1. Patient and Provider Care Communications** - Time the communication is sent.
- 2. Medication, Discharge** - Medication, Discharge refers to the list of medications included on the discharge instruction sheet provided to a patient.
- 3. Cumulative Medication Duration** is expressed in CQL logic which should include multiple dispensing events over the time period desired. To calculate Cumulative Medication Duration requires a new Supply attribute as well as the Frequency attribute of Medications.

# QDM 5.0 – Timing Period(s) – Remove Timing

## Remove the following timings

1. **Family History** – Timing is not relevant. Onset age can be managed using “Assessment, Performed”.
2. **Patient Characteristic, Birthdate** – Timing is not relevant - birthdate is an observation result.
3. **Patient Characteristic, Expired** – Timing is not relevant - expiration is an observation result.
4. **Patient Characteristic, Sex** – Timing is not relevant – sex as used in the QDM refers to administrative sex (i.e., birth sex).

# Conclusion

- **DRAFT QDM 5.0 for measure developers testing CQL**
  - Location on the [eCQI Resource Center](#)
  - Contact us at [qdm@esacinc.com](mailto:qdm@esacinc.com)
  - Or start a discussion: [qdm-user-group-list@esacinc.com](mailto:qdm-user-group-list@esacinc.com)

# Questions/Comments



# Resources

- HL7 Standard: Clinical Quality Language Specification, Release 1 DSTU
  - [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=400](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=400)
- GitHub Tools Repository
  - [https://github.com/cqframework/clinical\\_quality\\_language](https://github.com/cqframework/clinical_quality_language)
- CQL JIRA site
  - <https://oncprojecttracking.healthit.gov/support/browse/CQLI>



# Resources Cont'd

- Feedback Survey pops up at the close of this session
- ESAC QDM Email Account
  - [qdm@esacinc.com](mailto:qdm@esacinc.com)
- QDM JIRA Site
  - <https://oncprojecttracking.healthit.gov/support/browse/QDM>
- ESAC CQL Email Account
  - [cql-esac@esacinc.com](mailto:cql-esac@esacinc.com)

# eCQI Resource Center

- eCQI Resource Center - <https://ecqi.healthit.gov>
- QDM Space – <https://ecqi.healthit.gov/qdm>

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Latest News

- Mon 18 Jul **Bonnie (eCQM testing tool) User Group**  
 CMS and ONC invite you to join the new Bonnie User Group. Bonnie is a tool for testing electronic clinical quality measures (eQMs). The purpose of this user group is to create a community of Bonnie users that can benefit from one another's experience and questions, and to allow the development team to easily reach out to the community regarding new releases, proposed features, and focus group opportunities.  
 To join:
- Navigate to <https://groups.google.com/forum/#!forum/bonnie>
  - Sign into a google account.... [Read more](#)
- Tue 12 Jul **Alpha Versions of Bonnie Features Released to Staging Server**  
 The Bonnie team recently released alpha versions of several new features onto the Bonnie staging server (<https://bonnie.ahrqstg.org>). Because they are alpha versions for pre-production testing, these features may be unstable and prone to bugs. The

Upcoming Events

- Jul 25 2016 **Common Errors for QRDA Category I Test Files - Session I**  
 This Outreach and Education webinar for participants in the Hospital Inpatient Quality Reporting (IQR) Program is scheduled for Monday, July 25, 2016.  
 The webinar, titled *Common Errors for QRDA Category I Test Files - Session I* will be presented by Yan Heras, PhD, Lead Informaticist, ESAC Support Contractor (SC), and Artrina Sturges, EdD, Project Lead, Medicare IQR-Electronic Health Record (EHR) Incentive Program Alignment, Hospital Inpatient VIQR Outreach and Education SC.
- Aug 02 2016 **Cypress Testing Tool "Tech Talk"**  
 Bi-weekly Cypress "Tech Talk" call is held to review issues that arise when using the Cypress testing tool which

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**CMS** The Office of the National Coordinator for Health Information Technology

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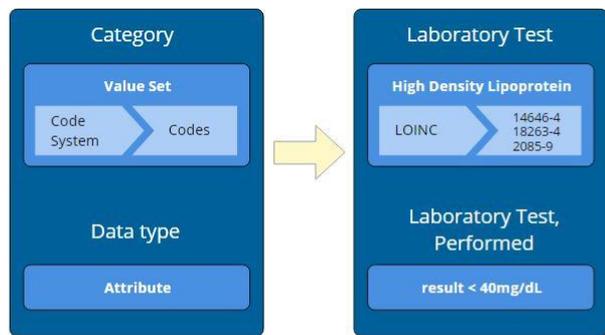
Topic areas EH Measures EP Measures CQL HQMF QDM QRDA Kaizen eCQM Tools Education Implementers

## QDM

### Introduction to the Quality Data Model

The Quality Data Model (QDM) is an information model that defines relationships between patients and clinical concepts in a standardized format to enable electronic quality performance measurement. The model is the current structure for electronically representing quality measure concepts for stakeholders involved in electronic quality measurement development and reporting. The QDM is currently being aligned with other relevant clinical decision support (CDS) standards.

The QDM provides the language that defines the criteria for clinical quality measurement. It allows the electronic definition of a clinical concept via its data elements and provides the vocabulary to relate them to each other. By relating attributes between data elements and using filtering functions, the QDM provides a method to construct complex clinical representations for electronic clinical quality measures.



**Category** - A single clinical concept that is the highest level of definition for a QDM element e.g., *Medication, Procedure, Condition/Diagnosis/Problem, Communication, Encounter*. The QDM currently contains 19 categories.

**Data Type** - Provides context within a category e.g., in a *'Medication'* category, *'Medication, Active'* and *'Medication, Administered'* are particular data types.

**Attribute** - Provides specific detail within a data type. There are two types of attributes, *data type specific* attributes and *data flow* attributes.

**Data type specific attributes** - Provides specific detail on a data type e.g., *Medication, Dispensed* and *Medication, Ordered* contains information about dosage, route, strength, and duration of a medication, while a *Medication allergy*, contains type, allergy severity, etc.

Request space membership

QDM Events  
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**Searchable Terms**

**eCQI Topic:**  
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**eCQI Author:**  
CMS

**eCQI Function:**  
eCQM Development - Concept>>>Specification  
eCQM Implementation

**eCQI User Level:**  
Advanced  
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Intermediate

**eCQI User Type:**  
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Developer/Vendor  
Measure Steward  
Provider, Professional.