



CQL for Clinicians and Quality Professionals: What it Means for You

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Topics

- What is Clinical Quality Language (CQL)?
- How does CQL help Explain Electronic Clinical Quality Measure (eCQM) Math?
- Importance of Eliminating Ambiguity
- CQL and eCQMs – What Does the Change Mean for You?
- Tools and Resources
- Questions



Acronyms

- CAH - Critical Access Hospital
- CDS - Clinical Decision Support
- CQL - Clinical Quality Language
- eCQM - Electronic Clinical Quality Measure
- EP - Eligible Professional
- ELM - Expression Logical Model
- HQMF - Health Quality Measure Format
- HL7 - Health Level Seven International
- MIPS - Merit-based Incentive Payment System
- QDM - Quality Data Model
- SQL - Structured Query Language

What is CQL?

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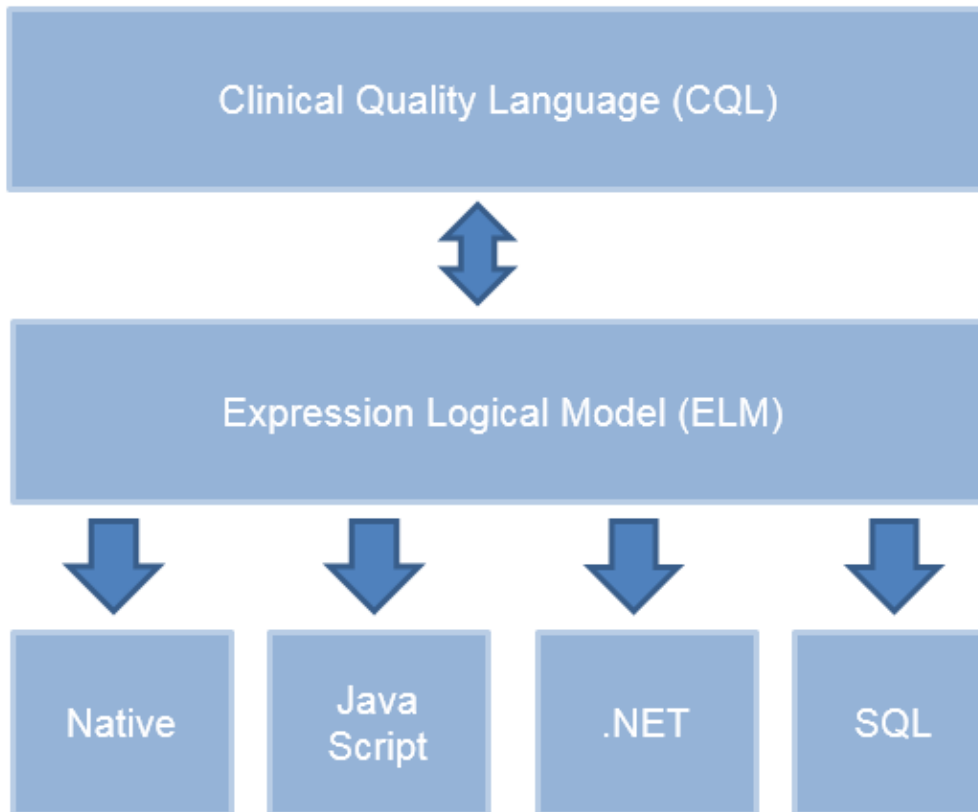
- CQL is a Health Level Seven (HL7) International standard that aims to unify the expression of logic for eCQMs and CDS
- Provides the ability to better express logic defining measure populations to improve the accuracy and clarity of eCQMs
- A standard language for expressing clinical knowledge that is readable, shareable, and computable

What is CQL?

- eCQMs will be transitioned to use the CQL standard for logic expression beginning with the CY 2019 reporting period
- Measure developers successfully tested CQL for expressing eCQMs from 2016 through 2017
- CMS will publish CQL-based eCQMs in Spring 2018
- Applicable to Eligible Hospitals and Critical Access Hospitals (CAHs), Eligible Professionals (EPs) and Eligible Clinicians participating in the following programs:
 - Hospital Inpatient Quality Reporting Program
 - Medicare Electronic Health Record Incentive Program for Eligible Hospitals and CAHs
 - Medicaid EHR Incentive Programs for EPs, Eligible Hospitals, and CAHs
 - Quality Payment Program: Merit-based Incentive Payment System (MIPS) and Alternative Payment Models

What is CQL?

•CQL Components



HUMAN READABLE
Authors use CQL to produce libraries containing human-readable, yet precise logic.

MACHINE READABLE
ELM XML documents contain machine-friendly rendering of the CQL logic. This is the intended mechanism for distribution of libraries.

LOCAL SYSTEMS
Quality measure calculation systems will either directly evaluate the ELM or translate it into other formats such as JavaScript, .NET or SQL.

How Does CQL Help Explain eCQM Math?

How Does CQL Help Explain eCQM Math?

Quality Measurement

- What is a quality measure?
 - Quantitative tool to assess performance related to a specific clinical process or outcome
- What is an eCQM?
 - Electronic representation of a quality measure with the goal of enabling the measure to be evaluated as automatically as possible

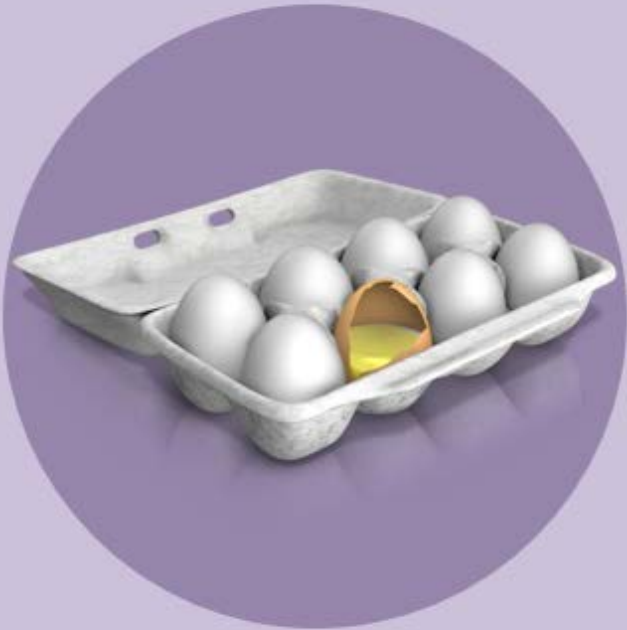


Consider: A Guideline is analogous to a recipe with options to individualize

- Suggestions for common considerations
- Indications to avoid major mismatches
- Allowances for individual variation and shared decision making within best practice guard rails

A Performance Measure is an assessment of adherence to the guideline, accounting for acceptable variation using exclusions and exceptions.

Consider the Similarities:



Example:

- Eggs Benedict
(using only the
“good” eggs)

Recipe Name – Eggs Benedict

General Information: Metadata

- Source: <http://www.geniuskitchen.com/recipe/eggs-benedict-225108>
- Yield: Number of servings (6)
- Prep Time: Hours and Minutes (Not available)
- Total Time: Prep + Cook Time (15 minutes)
- Units: US
- Calories per Serving: Not available

Ingredients

	<u>Item:</u>	<u>Quantity:</u>
	Ham	6 slices
	Butter	1 ½ tablespoons
	English muffins	3 (split, toasted, buttered)
	Eggs	6
	Hollandaise sauce	

Ingredients

- 4 egg yolks
- 2 tablespoons lemon juice
- ¼ teaspoon salt
- 1/8 teaspoon pepper
- ½ cup hot melted butter



Shopping List

- Ham slices
- Butter (1 pound)
- Salt
- Pepper
- English muffins
- Eggs (1 dozen)
- Hollandaise sauce

Recipe Name – Eggs Benedict

Instructions:

1. Sauté the ham slices in the butter for 2 minutes
2. Place the ham on English muffins
3. Poach the eggs in simmering water in a frying pan (a splash of white vinegar will help keep them together)
4. When set, remove the eggs from the water with a slotted spoon and place on ham
5. Pour hollandaise sauce over eggs and serve

To make hollandaise sauce

1. Whirl egg yolks, lemon juice, salt and pepper in blender on high for 30 seconds
2. Uncover and continue to blend on high while slowly adding the melted butter in a thin slow stream
3. When the sauce is thick and creamy, pour over eggs and serve

Missing information:

1. Water
2. White vinegar
3. Definitions
4. Sauté
5. Poach
 - a) Simmering
 - b) Splash
6. Whirl



Optional Variations:

1. Poach instructions
2. Microwave
3. Egg poacher
4. Substitutions/Additions:
5. Smoked salmon (instead of ham)
6. Canadian bacon (instead of ham)
7. Asparagus spears (cold, cooked)
8. Order fast food breakfast sandwich

The Importance of Eliminating Ambiguity

Consider: The Meaning of a Term Vs Ambiguity

- XL

- Latin: Consonants
- Roman: 40 (as in Super Bowl 40, February 5, 2006)
- Garment District: Extra-large (size)

Measuring Performance for a Guideline

General Information:

- Children who have evidence of receiving recommended vaccines, having a documented clinical history of serologic evidence of the illness the vaccine is intended to prevent
 - Evidence: Recommended vaccines by age: <https://www.cdc.gov/vaccines/vpd/vaccines-age.html>
 - Identifier: CMS #
 - Measurement Period: January 1, 20xx to December 31, 20xx
 - Measure Steward:
 - Description:
 - Etc.

Data Elements (Examples):

- Age – 2 years of age during the measurement year
- DTaP vaccine (# doses)
- MMRV Vaccine (# doses)
- Varicella diagnosis
- Laboratory immunity to Varicella
- Etc.
- DTaP (Diphtheria, Tetanus, acellular Pertussis Combination Vaccine)
- MMRV – Measles Mumps Rubella Varicella Combination Vaccine

Value Sets

- DTaP vaccines
- MMR vaccines
- Varicella vaccines
- MMRV vaccines
- Varicella diagnoses
- Laboratory tests for varicella immunity and relevant results to indicate immunity
- Etc.



Measure Logic Expression – Childhood Vaccination

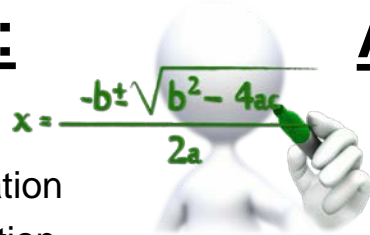
Instructions:

1. Required:

- a. DTaP Vaccination
- b. MMR Vaccination
- c. Varicella Vaccination
 - Or, Varicella clinical diagnosis
 - Or, Varicella serologic evidence of immunity
- d. Etc.

Before the 2nd birthday

Measures use CQL to express the logic and relationships among the data elements



Assure No Missing Information

1. Define serologic result values that indicate positive immunity
2. Or, expect local mapping of serology results to codes indicating serologic evidence consistent with history of varicella disease
 - a. *Allows local variation in interpretation*
 - b. *Allows local variation in which lab tests are acceptable*

Optional Variation(s)

3. Vaccine administered (immunization records)
4. Billing code for administering the vaccine
5. Family attestation that the vaccine was administered

How Does CQL Help Explain eCQM Math?

- CQL allows:
 - Definition of exact time relationships needed (e.g., are the data elements separated by seconds, minutes, hours, or days)
 - Clearer data element start and stop times that were often vague or ambiguous in QDM logic
 - Calculation in a format more suitable for computer processing

How Does CQL Help Explain eCQM Math?

- CQL allows simple calculations, e.g., stating basic addition, subtraction, or multiplication not possible with QDM logic:
 - Positive change in PHQ-9 depression scale after six months of treatment
 - LDL calculated as $(TC - HDL)$
 - Cumulative medication duration – Medication prescriptions covering at least 180 days of treatment

- PHQ - Personal Health Questionnaire
- LDL - Low-density lipoprotein
- HDL – High-density lipoprotein
- TC – Total Cholesterol

CQL and eCQMs – What Does the Change Mean for You?

What Does the Change Mean for You?

- Initial learning curve, but CQL measures will be more readable and more clearly detail the intent of the measures
- Better explain how measure outcomes are to be interpreted

What Does the Change Mean for You?

- Cumulative Medication Duration Example
 - *Dispensing*: Calculated from the number of doses dispensed divided by the number of doses per day – and then add all dispensing events to come up with the total number of days covered by multiple dispensing events over a defined time period
 - *Administering*: Calculated from the number of administration events from the beginning of the first to the end of the last over the defined period of time

What Does the Change Mean for You?

- The intent of CQL is to more accurately represent clinical performance by allowing the use of more precise methods to define activities
 - Improves the ability to read, interpret, and understand measure logic
 - Enables more automation to retrieve data with less data entry on the front end
 - Allows for prospective evaluation of a patient's record to recommend actions as Clinical Decision Support (CDS)

What Does the Change Mean for You?

- **Data *may* be impacted by the change in the interpretation of measures**
- **Work with your IT staff to:**
 - Help prospectively improve chances of doing well on the measures - reuse logic for CDS to improve performance
 - Assess whether unexpected results of measure scores can be improved by evaluating if recommended interventions have occurred and if the clinical outcome has been achieved

What Does the Change Mean for You?

- CMS will be releasing CQL-based eCQMs for CY 2019 CMS quality reporting programs in Spring 2018
- CMS will release guidance on “How to read an eCQM” with incorporation of CQL for logic
- DRAFT measures expected to be posted to the CQM JIRA project today through 3/30/2018

Resources

- CQL Specification - CQL Release 1, Standard for Trial Use (STU) 2
 - http://www.hl7.org/implement/standards/product_brief.cfm?product_id=400
- CQL-Based HQMF Implementation Guide – Release 1, STU 2.1
 - http://www.hl7.org/implement/standards/product_brief.cfm?product_id=405
- eCQI Resource Center
 - CQL Space, including the QDM v5.3 and v5.3 Annotated
 - <https://ecqi.healthit.gov/cql>
 - Check the eCQI Resource Center Events page and CQL Educational Resources page for more information
 - <https://ecqi.healthit.gov/ecqi/ecqi-events>
 - <https://ecqi.healthit.gov/cql/cql-educational-resources>
- To submit an issues ticket for CQL, please visit the ONC JIRA site
 - <https://oncprojecttracking.healthit.gov/support/projects/CQLIT>
- To view draft 2019 eCQMs
 - <https://oncprojecttracking.healthit.gov/support/projects/CQM>

Questions?