CMS Digital Quality Measure (dQM) Public Comment

January 21, 2026

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Agenda

- Purpose and Goals of this Presentation
- Transitioning to Digital Quality Measurement
  - Advancing quality measures through the use of Fast Healthcare Interoperability Resources (FHIR)
  - FHIR benefits and overview
  - FHIR as it applies to quality measures
- Measure Authoring Development Integrated Environment (MADiE)
  - dQM packages
  - Test case exports

Agenda

- dQM Components
  - Human readable
  - Data model
- Hypoglycemia Measures
  - CMS/Centers for Disease Control and Prevention (CDC) Collaboration
- dQM Public Comment
  - Feedback process
  - Key considerations for review
- Appendix
  - Glossary of terms

Purpose and Goals

- Purpose
  - This presentation is intended to provide a glimpse into the future of quality reporting in CMS programs
  - Strategy overview
- Provide guidance for dQM public comment
  - Changes to CMS program measures
  - Key review topics
  - Comment process
- Goals
  - Provide insight into the transition to digital quality measurement
  - Attendees are able to review and provide feedback on artifacts

Advancing Quality Measures

- CMS is converting its current set of eCQMs to dQMs based on FHIR standards
  - Converted eCQMs will constitute a subset of dQMs
  - Are distinct from the current program eCQMs

- CMS Program Electronic Clinical Quality Measures (eCQMs)
  - Long standing use in CMS quality reporting programs
  - Based on the Quality Data Model (QDM), defined for CMS use
  - Primary data source intended to be electronic health record (EHR)

- Digital Quality Measures (dQMs)
  - Will leverage interoperable FHIR base data exchange
  - Data requirements are modular and interoperable across use cases
  - Expands data source concept to devices, systems or applications outside of traditional EHRs

What is FHIR?

- Health Level Seven® (HL7®) FHIR®
  - Next generation standards framework
  - Defines base resources to support the exchange of healthcare information across systems
  - Makes use of Representational State Transfer (RESTful) application programming interfaces (APIs) for seamless data exchange
  - Managed through HL7 community-based consensus processes

https://www.healthit.gov/sites/default/files/2019-08/ONCFHIRFSWhatIsFHIR.pdf

Why FHIR?

- FHIR provides a comprehensive framework for implementing clinical quality measures, offering a standardized set of resources and operations that support the representation, sharing, and evaluation of clinical knowledge artifacts.

- This framework enables:
  - Standardization and Interoperability
  - Automation and Real-time Access
  - Improved Data Quality and Actionability
  - Efficiency and Agility
  - Support for Bulk Data Exchange

FHIR Resources

- What are FHIR Resources?
  - In FHIR, healthcare data is broken down into categories such as patients, encounters, medications, etc. Each of these categories are represented by a FHIR resource which includes its data elements, constraints on data and relationships.
  - Resources are designed for reuse, performance, usability, fidelity and ease of implementation.

FHIR Resources

Here are some common Resources used in dQMs:

Clinical Module	Diagnostics Module	Medications Module	Financial Module
Condition (Problem)	Observation	Medication	Claim
Procedure	DiagnosticReport	MedicationRequest	Coverage
ServiceRequest		MedicationAdministration	
		Immunization	

FHIR Profiles

- FHIR Resources provide the template for structuring healthcare data. These Resources are somewhat generic to allow for global implementation.

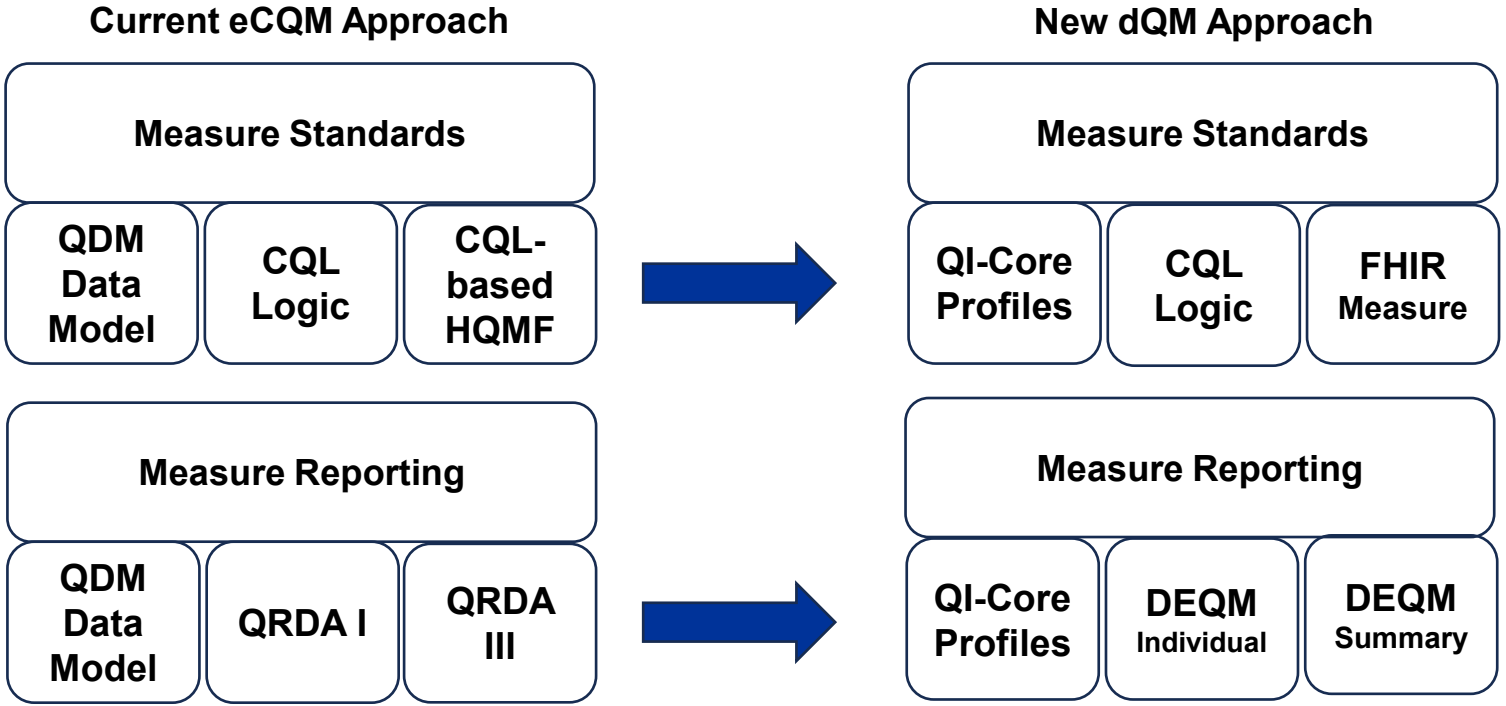
- Profiles allow additional rules or constraints to be applied to base resources to tailor how resources are used in specific use cases.
  - Extensions: adds new custom data fields to a base resource
  - Bindings: associates elements with specific value sets/codes
    - Levels of strictness- required, extensible, preferred, and examples
  - Constraints: restricts the allowed characteristics of an element
    - Cardinality constraints (e.g., change from 0..1 to 1..1)
    - Must Return expression- (e.g., must return true)

Profiles cannot remove or relax existing rules from base FHIR

FHIR Implementation Guides

- Collections of profiles and related guidance are published as Implementation Guides (IGs).
- There are a number of FHIR IGs that support digital quality measurement, primarily these:
  - Quality Improvement Core (QI-Core)
    - Contains profiles and guidance on the structure of clinical data used in quality measures.
  - Quality Measure IG (QM IG)
    - Contains profiles and guidance on the structure of quality measures.
  - Data Exchange for Quality Measures (DEQM)
    - Contains profiles and guidance for the exchange of quality measure data.

Transition to FHIR based Standards



eCQM = Electronic Clinical Quality Measure
HQMF = Health Quality Measure Format
QRDA = Quality Reporting Document Architecture

QDM Datatype and QI-Core Profile

QDM Datatypes	QI-Core Profiles with datatype to match intent
“Diagnosis”	Condition Encounter Diagnosis Condition Problems Health Concerns
“Encounter, Performed”	Encounter **status = “finished”**
“Laboratory Test, Performed”	Laboratory Result Observation
“Medication, Administered”	MedicationAdministration **status = ‘completed’**
“Medication, Order”	MedicationRequest **status= ‘completed’ intent = ‘order’**
“Physical Exam, Performed”	observation-vitalsigns **12 Observation profiles r/t exams**
“Physical Exam, Order”	ServiceRequest **status = ‘completed’ intent = ‘order’**
Patient Characteristic, Birthdate”	Patient **with the AgeInYearsAt(x) operator**
“Procedure, Performed”	Procedure **status = ‘completed’**
“Procedure, Order”	ServiceRequest **status = ‘completed’ intent = ‘order’**

CQL with QDM versus QI-Core

QDM

define "Initial Population":

AgeInYearsAt(date from end of "Measurement Period") in Interval[18, 75]

and exists ("Qualifying Encounters")

and exists (**["Diagnosis":** "Diabetes"] DiabetesDx

where DiabetesDx.prevalence**Period** overlaps day of "Measurement Period")

QI-Core

define "Initial Population":

AgeInYearsAt(date from end of "Measurement Period")in Interval[18, 75]

and exists ("Qualifying Encounters")

and exists ((([**ConditionEncounterDiagnosis**: "Diabetes"]).**verified()**) DiabetesDx

where DiabetesDx.prevalence**Interval()** overlaps day of "Measurement Period")

What is MADiE?

- A tool to author and test quality measures within a single application using.
- Supports consistency through the use of shared libraries.
- Ensures conformance with measure related standards
  - QI-Core
  - QDM
  - CQL
  - QM IG
- Specifications and test cases can be exported from MADiE.

dQM Measure Package

- MADiE dQM exports include:
  - **Measure HyperText Markup Language (HTML):** This is the human readable representation of the measure in a web page.
  - **Measure JavaScript Object Notation (JSON):** The JSON representation of the measure.
  - **Measure Extensible Markup Language (XML):** The XML representation of the measure.
  - **CQL Folder**
    - **Measure CQL**: The CQL the user entered for the measure.
    - **CQL for all Included Libraries**: The CQL for any library that was included in the measure.
  - **Resource Folder**
    - **JSON File for All Included Libraries:** The JSON representation of any included library.
    - **XML File for All Included Libraries**: The XML representation of any included library.

dQM Header

- Human-Readable document is an HTML file that displays the dQM's content in human readable format, including the metadata, population criteria, value sets and logic. It contains both narrative and structured information.

Metadata	
Title	Preventive Care and Screening: Screening for High Blood Pressure and Follow-Up DocumentedFHIR
Version	1.0.000
Short Name	CMS22FHIR
GUID (Version Independent)	urn:uuid:1b17d846-cbe0-49fa-b503-518addf19fb0
GUID (Version Specific)	urn:uuid:54d53d09-d587-47b9-858f-2c6738fba7e7
CMS Identifier	22FHIR
Effective Period	2026-01-01 through 2026-12-31
Steward (Publisher)	Centers for Medicare & Medicaid Services (CMS)
Developer	American Institutes for Research (AIR)
Description	Percentage of patient visits for patients aged 18 years and older seen during the measurement period who were screened for high blood pressure AND a recommended follow-up plan is documented, as indicated, if blood pressure is elevated or hypertensive
Copyright	This electronic clinical quality measure (Measure) and related data specifications are owned and stewarded by the Centers for Medicare & Medicaid Services (CMS). CMS contracted (Contract # 75FCMC18D0027/ Task Order #: 75FCMC24F0144) with the American Institutes for Research (AIR) to develop this electronic measure. AIR is not responsible for any use of the Measure. AIR makes no representations, warranties, or endorsement about the quality of any organization or physician that uses or reports performance measures and AIR has no liability to anyone who relies on such measures or specifications. Limited proprietary coding is contained in the Measure specifications for user convenience. Users of proprietary code sets should obtain all necessary licenses from the owners of the code sets. AIR disclaims all liability for use or accuracy of any third-party codes contained in the specifications. CPT(R) contained in the Measure specifications is copyright 2004-2024 American Medical Association. LOINC(R) is copyright 2004-2024 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2024 International Health Terminology Standards Development Organisation. ICD-10 is copyright 2024 World Health Organization. All Rights Reserved.
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dQM Human Readable Body

- The human readable body is also referred to as the logic.

Population Criteria	
Measure Group (Rate) (ID: Group_1)	

Initial Population	`define "Initial Population":`
	`  "Qualifying Encounter during Measurement Period" QualifyingEncounter`
	`  where AgeInYearsAt(date from start of "Measurement Period") >= 18`

Denominator	`define "Denominator":` `  "Initial Population"`

Denominator Exclusion	`define "Denominator Exclusions":`
	`  "Qualifying Encounter during Measurement Period" QualifyingEncounter`
	`  with [ConditionProblemsHealthConcerns: "Diagnosis of Hypertension"] Hypertension`
	`  such that Hypertension.prevalenceInterval ( ) starts before or on day of QualifyingEncounter.period`
	`  and Hypertension.isVerified ( )`

Numerator	`define "Numerator":`
	`  "Encounter with Normal Blood Pressure Reading"`
	`  union ( "Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80 and Interventions" )`
	`  union ( "Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80 and Interventions"`
	`  union ( "Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 and Interventions" )`
	`  union ( "Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 and Interventions`

Denominator Exception	`define "Denominator Exceptions":`
	`  "Encounter with Medical Reason for Not Obtaining or Patient Declined Blood Pressure Measurement"`
	`  union "Encounter with Order for Hypertension Follow Up Declined by Patient"`

Differences Between an eCQM & dQM

- There are subtle differences in some human readable fields.
- Some previous fields are no longer included, such as Transmission Format.
- Some fields are new, such as GUID (Version Specific).

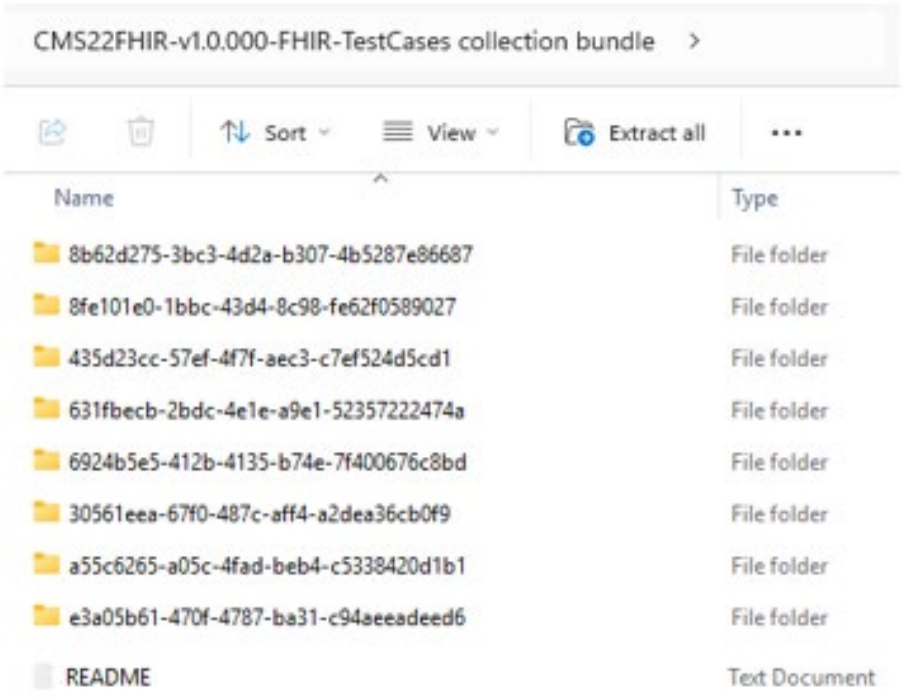
QDM Metadata Terms	dQM Metadata Terms
eCQM Title	Title
CMS ID	CMS Identifier
eCQM Version Number	Version
GUID	GUID (Version Independent)
Measurement Period	Effective Period
Reference	Citation

Test Case Export

- MADiE Test case export contains:

  Each test case bundle is in a sub-folder named by the PatientID

  The “README” file provides mapping of test case information to the UUID (PatientID)



Test Case Export

- README File

```
The purpose of this file is to allow users to view the mapping of test case names to their test case UUIDs. In order to find a
specific test case file in the export, first locate the test case name in this document and then use the associated UUID to find the
name of the folder in the export.

Case # 43 - 8fe101e0-1bbc-43d4-8c98-fe62f0589027 = NUMERFail ElevatedBPNoIntervention
Case # 42 - 8b62d275-3bc3-4d2a-b307-4b5287e86687 = NUMERPass ElevatedBP2to3MonthFU
Case # 41 - e3a05b61-470f-4787-ba31-c94aeeadeed6 = IPPFail EncounterOneDayBeforeMP
Case # 40 - a55c6265-a05c-4fad-beb4-c5338420d1b1 = DENEXCEPPass ElevatedBP4to6FUDeclinedFirstDayOfMP
Case # 39 - 30561eea-67f0-487c-aff4-a2dea36cb0f9 = IPPFail EncounterOneDayAfterMP
Case # 38 - 6924b5e5-412b-4135-b74e-7f400676c8bd = DENEXCEPFail ElevatedDeclineFUIntentPlan
Case # 36 - 631fbecb-2bdc-4e1e-a9e1-52357222474a = NUMERFail NormalBPStatusEnteredInError
Case # 35 - 435d23cc-57ef-4f7f-aec3-c7ef524d5cd1 = DENEXPass HTNOneDayBeforeEnc
```

Case # is used to track in MADiE

UUID (PatientID) is the name of the test bundle folder

The grouping of the test case from MADiE indicates the expected outcome of the test case

The test case title from MADiE generally provides additional details related to the expected outcome

CMS and CDC NHSN Hypoglycemia Measures

- These two measures are designed to be aligned
- Hospitals would be able to meet both CDC and CMS reporting needs with a single monthly submission
  - **CMS Hospital Harm - Severe Hypoglycemia FHIR**
    - Designed as a FHIR digital quality measure
    - Calculation happens when the facility reports the measure
  - **NHSN Glycemic Control (Severe Hypoglycemia) FHIR digital quality measure (dQM)**
    - Supports an electronic health record (EHR)- and vendor-neutral standard for reporting patient-level, linked medication and blood glucose data for inpatients via FHIR
    - Calculation happens by the NHSN application and provided as monthly reports (event rates, line-lists) to the facility.

CMS and CDC NHSN Severe Hypoglycemia dQMs

	CMS	CDC NHSN*
Description	**Measure scoring:** Proportion **Measure type:** Outcome **Effective period:** 1 calendar year **Patient age:** 18 years and older Inpatient encounters** identified using SNOMED CT codes **Medications:** Hypoglycemic medication **Blood glucose tests: :** < 40 mg/dL (with criteria for false positives)	**Measure scoring:** Proportion **Measure type:** Outcome **Effective period:** 1 month (can be summed up to 1 calendar year) **Patient age:** 18 years and older **Inpatient encounters**** identified using selected FHIR Encounter codes (SNOMED CT and other terminologies) **Medications:** Hypoglycemic medication **Blood glucose tests:** < 40 mg/dL (with criteria for false positives)
Value Sets	**Blood Glucose Laboratory Tests**	
	16 concepts Mass/volume measurement	84 concepts (including CMS's 16) Mass/volume measurement
	Anti-diabetic Medications	
	RxNorm term types: SCD, generic **Concepts includes:** 92	**RxNorm term types**: all **Concepts includes:** 975 (including CMS's 92)

*The CDC NHSN measure utilizes an initial population of patients of all ages and on all medications, and narrows down to the severe hypoglycemia measure criteria.
*Both CDC and CMS measures also include emergency department/observation visits ending within 1 hour of an inpatient admission.

CDC NHSN Severe Hypoglycemia dQM Additional Information

NHSN digital Quality Measures (dQM) Resource Center

www.cdc.gov/nhsn/fhirportal/dqm/ach-dQMs
Includes: NHSN Hypoglycemia FHIR dQM Specifications

NHSN FHIR dQM Readiness Materials

www.cdc.gov/nhsn/fhirportal/dqm/fhir-ready
Includes: Key Actions Items for Reporting dQMs to NHSN

NHSN FHIR dQM Implementation Guides (IG)

HL7 NHSN dQM Reporting IG: hl7.org/fhir/us/nhsn-dqm/2024Sep/indexIG
CDC NHSN dQM Content Package IG: www.cdc.gov/nhsn/fhirportal/dqm/ig

CMS dQM Public Comment

- CMS is seeking public feedback on draft dQMs to be considered for future use in CMS Quality Reporting Programs.
  - dQM packages have been attached to ONC Jira tickets for review
    - 17 Hospital Inpatient dQMs have been posted: CQM-8400
    - 4 Hospital Outpatient dQMs have been posted: CQM-8402
    - 49 Eligible Clinician dQMs have been posted: CQM-8399
  - Test case exports have been provided for a subset of dQMs
    - CMS has posted a Guide for Reading dQM Test Cases to assist in your review
  - Targeted Questions document is posted with the measure packages to indicate areas of specific interest to CMS and CDC
  - Comments will be accepted from **1/21/2026** through **2/23/2026**
  - Feedback can be added as comments on the ONC Jira tickets

Questions & Answers

Q&A

Appendix

Glossary of Terms

Glossary of Terms

Alignment

- Alignment with respect to the process of ensuring that similar standardized quality measures are used consistently across different programs and sectors, both in government and private initiatives. This involves harmonizing measures so that they are compatible and comparable, which helps in providing clear and consistent information for patients, consumers, and stakeholders. Alignment is achieved when a set of measures works well across settings or programs to produce meaningful information without creating extra work for those responsible for the measurement.

Application programming interface (API)

- An application programming interface (API) is a system of tools and resources in an operating system enabling developers to create software applications. An API is a software intermediary allowing two applications to talk to each other. Each time you use an app like Facebook, send an instant message, or check the weather on your phone, you are using an API. Frye, M-K. (n.d.). What is an API? Retrieved September 13, 2023, from https://www.mulesoft.com/resources/api/what-is-an-api

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

CQL

- Clinical Quality Language (CQL) is a Health Level Seven International® mixed normative/standard for trial use and it is part of the effort to harmonize standards between electronic clinical quality measures and clinical decision support. CQL provides the ability to express logic that is human readable yet structured enough for processing a query electronically.

Denominator

- The denominator is the lower part of a fraction used to calculate a rate, proportion, or ratio. It can be the same as the initial population or a subset of the initial population to further constrain the population for the purpose of the measure. Continuous variable measures do not have a denominator but instead define a measure population.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

Denominator exception

- A denominator exception is any condition that should remove a patient, procedure, or unit of measurement from the denominator of the performance rate only if the numerator criteria are not met. A denominator exception allows for adjustment of the calculated score for those measured entities with higher risk populations. A denominator exception also provides for the exercise of clinical judgment, and the measure developer should specifically define where to capture the information in a structured manner that fits the clinical workflow. The measured entity removes denominator exception cases from the denominator. However, the measured entity may still report the number of patients with valid exceptions. Allowable reasons fall into three general categories - medical reasons, patient reasons, or system reasons. Only proportion measures use a denominator exception.

Denominator exclusion

- A denominator exclusion is a case the measured entity should remove from the measure population and denominator before determining if numerator criteria are met. Proportion and ratio measures use denominator exclusions to help narrow the denominator. For example, a measure developer would list patients with bilateral lower extremity amputations as a denominator exclusion for a measure requiring foot exams. Continuous variable measures may use denominator exclusions but may use the term measure population exclusion instead of denominator exclusion.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

DEQM IG

- The Health Level Seven International® (HL7®) Data Exchange for Quality Measures (DEQM) Implementation Guide (IG) provides a framework defining conformance profiles and guidance to enable the exchange of quality improvement information including quality measure reporting (e.g., for transferring quality information from a health care provider to a payor) using Fast Healthcare Interoperability Resources® (FHIR®)-based resources.
- The DEQM IG supports data exchange and reporting scenarios including individual reporting, subject list reporting, summary reporting, and gaps in care reporting. The DEQM Individual MeasureReport profile supports individual reporting and is intended to replace the current Quality Reporting Document Architecture (QRDA) Category I format. The DEQM Summary MeasureReport profile supports summary reporting and is intended to replace the current QRDA Category III format.

Digital Quality Measure

- CMS defines digital quality measures (dQMs) as quality measures that use standardized, digital data from one or more sources of health information that are captured and exchanged via interoperable systems; apply quality measure specifications that are standards-based and use code packages; and are computable in an integrated environment without additional effort.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

Electronic clinical quality improvement (eCQI)

- Electronic clinical quality improvement (eCQI) is the use of health information technology, and the functionality and data in an electronic health record and/or other health information technology, along with clinical best practices to support, leverage, and advance quality improvement initiatives.

Electronic health record (EHR)

- An electronic health record (EHR) is also known as the electronic patient record, electronic medical record, or computerized patient record. An EHR is a “longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, diagnoses and treatment, medications, allergies, immunizations as well as radiology images and laboratory results.” International Social Security Association. (n.d.). *Information and communication technology- Guideline 91. Electronic health record system.* Retrieved March 20, 2024, from https://ww1.issa.int/guidelines/ict/180156

FHIR-based Shared Libraries

- Share Library is a shared QI-Core based-Clinical Quality Language (CQL) library which contains CQL expressions for all eCQM developers to use when specifying FHIR based -eCQM.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

Fast Healthcare Interoperability Resources (FHIR) profile

- A Fast Healthcare Interoperability Resources® (FHIR®) profile is a set of requirements and constraints placed on a resource. It can describe general features the system supports for that resource or information handled or produced according to a specific use case. Often, they include rules about which application programming interface features, terminologies, or resource elements the FHIR profile uses or does not use.

Measure developer

- A measure developer is an individual or organization responsible for the development, implementation, and maintenance of a measure. Measure developers may create, edit, and submit measures for consideration by CMS to include in programs. CMS encourages measure developers to use the Blueprint content on the Measures Management System Hub as a guide in creating their measures and to collaborate with other measure developers to share best practices/new learnings freely, e.g., CMS measure development contractors, hospital systems, medical associations, or federal health agencies.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

Numerator

- The numerator is the upper portion of a fraction used to calculate a rate, proportion, or ratio. Also called the measure focus, it is the target process, condition, event, or outcome. Numerator criteria are the processes or outcomes expected for each patient, procedure, or other unit of measurement defined in the denominator. A numerator statement describes the action that satisfies the conditions of the quality measure.

QDM

- The Quality Data Model (QDM) is a conceptual information model defining principal concepts (classes) of information, their related attributes, and their relationships. The Model provides a standardized way to express what needs to be retrieved from electronic records to enable quality performance measurement. The QDM is the current structure for electronically representing quality measure concepts for stakeholders involved in electronic quality measure development and reporting.

QI-Core

- Quality Improvement Core (QI-Core) is a Health Level Seven International® (HL7®) implementation guide that defines a set of Fast Healthcare Interoperability Resources® (FHIR) profiles that support successful creation of interoperable and quality-focused applications including Electronic Clinical Quality Measures (eCQMs) and Clinical Decision Support (CDS) artifacts.

https://ecqi.healthit.gov/glossary/d

Glossary of Terms

Quality Data Model (QDM) data element

- A Quality Data Model (QDM) data element encapsulates a certain category with an associated datatype. It is a discrete unit of information used in quality measurement to describe part of the clinical care process, including a clinical entity and its context of use. It can include criteria for any relevant metadata about a clinical or administrative concept relevant to quality measurement. A QDM data element provides an unambiguous definition and enables consistent capture and use of data for quality measurement. The measure developer may define for any given measure and reuse when they require the same information for another measure. Reuse encourages standardization of quality measures and reduces the generation of additional software requirements for every new measure.

Quality Data Model (QDM) datatype

- A Quality Data Model (QDM) datatype is the context in which each category is used to describe a part of the clinical care process. Examples of QDM datatypes include "Medication, Active" and "Medication, Administered" as applied to the QDM Medication category.

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Glossary of Terms

Specification

- A specification is a measure's instructions addressing data elements, data sources, point of data collection, timing and frequency of data collection and reporting, specific instruments used (if appropriate), and implementation strategies.

Value set

- A value set is a list of specific values, terms, and their codes, used to describe clinical and administrative concepts in quality measures. Value sets provide groupings of unique values along with a standard description or definition from one or more standard vocabularies used to describe the same clinical concept, e.g., diabetes, clinical visit, demographics, within quality measures. Examples of standard vocabularies used to support effective, interoperable health information exchange include SNOMED CT, RxNorm, and Logical Observation Identifiers Names and Codes.

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