EHDI Electronic Clinical Quality Measure Standards Landscape

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EHDI Conference

Integrating Healthcare Enterprise (IHE)

- http://www.ihe.net/
- IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of established standards to address specific clinical needs in support of optimal patient care.
- IHE Quality, Research, and Public Health (QRPH) Domain
  - addresses the information exchange and electronic health record content standards necessary to share information relevant to quality improvement in patient care, clinical research and public health monitoring
    - **Early Hearing Detection and Intervention (EHDI)** describes a family of profiles that help to assess, track, treat, and perform quality metrics initiatives related to newborn hearing.
    - **Newborn Admission Notification Information (NANI)** describes the content needed to communicate a timely newborn admission notification to public health to be used by Early Hearing Detection and Intervention (EHDI) screening programs.
    - **Quality Measure Execution-Early Hearing (QME-EH)** describes the content needed to communicate patient-level data to electronically monitor the performance of early hearing-loss detection and intervention (EHDI) initiatives for newborns and young children.
    - [Electronic Clinical Quality Measure (eCQM) Standards Landscape](#) - Published 2018-02-06

Clinical Quality Measure 101

- A Quality Measure is a tool used to measure performance against a recognized standard of care

- Quality measures are tools that help us measure or quantify healthcare processes, outcomes, patient perceptions, and organizational structure and/or systems that are associated with the ability to provide high-quality health care and/or that relate to one or more quality goals for health care. These goals include: effective, safe, efficient, patient-centered, equitable, and timely care.

"You can't manage what you don't measure" -- Peter Drucker

Burden of quality measure reporting

- US physicians practices spend more than $15.4 billion annually to report quality measures -- Health Affairs March 2016

- On average, physicians and staff spent a total of 15.1 hours per physician per week dealing with quality measures, with the average physician spending 2.6 hours per week and other staff spending 12.5 hours. By far the most time — 12.5 hours of physician and staff time per physician per week — was spent on 'entering information into the medical record ONLY for the purpose of reporting for quality measures from external entities.' The time spent by physicians and staff translates to an average cost to a practice of $40,069 per physician per year.

Electronic Clinical Quality Measure (eCQM)

- Contains data elements and logic in a format that a machine can process
- Gather data from an electronic source
- "will ultimately reduce burden on hospitals as compared with chart-abstracted data reporting and improve patient outcomes by providing more robust data to support quality improvement efforts...measures available now and those being developed for the future are increasingly based on electronic standards". *

*CMS. (2016). Fiscal Year 2017 Hospital Inpatient Prospective Payment System Final Rule. Available at https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/FY2017-IPPS-Final-Rule-Home-Page.htm

Challenges

- Can only process structured data

- Cannot make inferences from multiple data sources

- Requires rigid process logic and standards

- Many organizations consider the entry and creation of quality measurement data as separate from delivering patient care. Providers consider clinical care data in EHRs distinct from quality measures data.
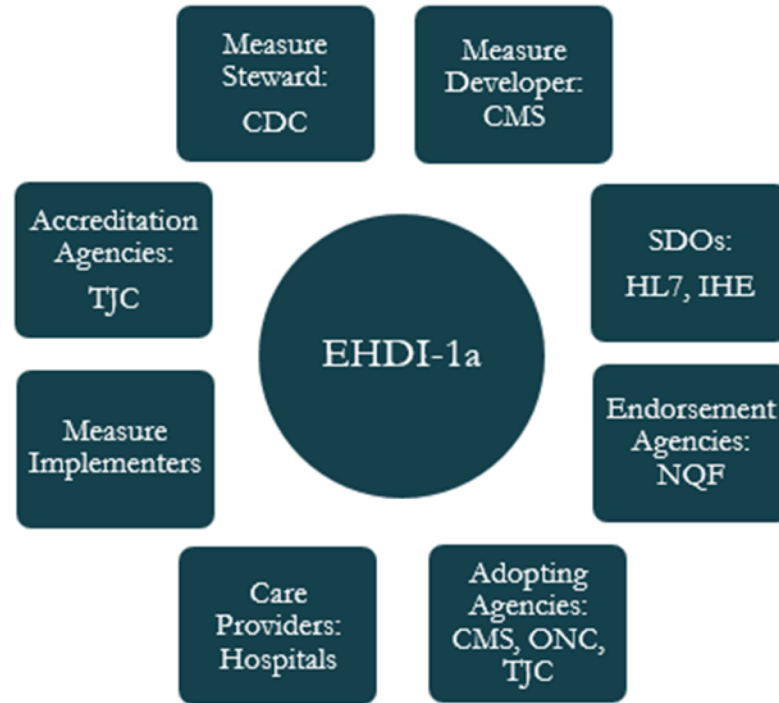
Quality Measure Lifecycle
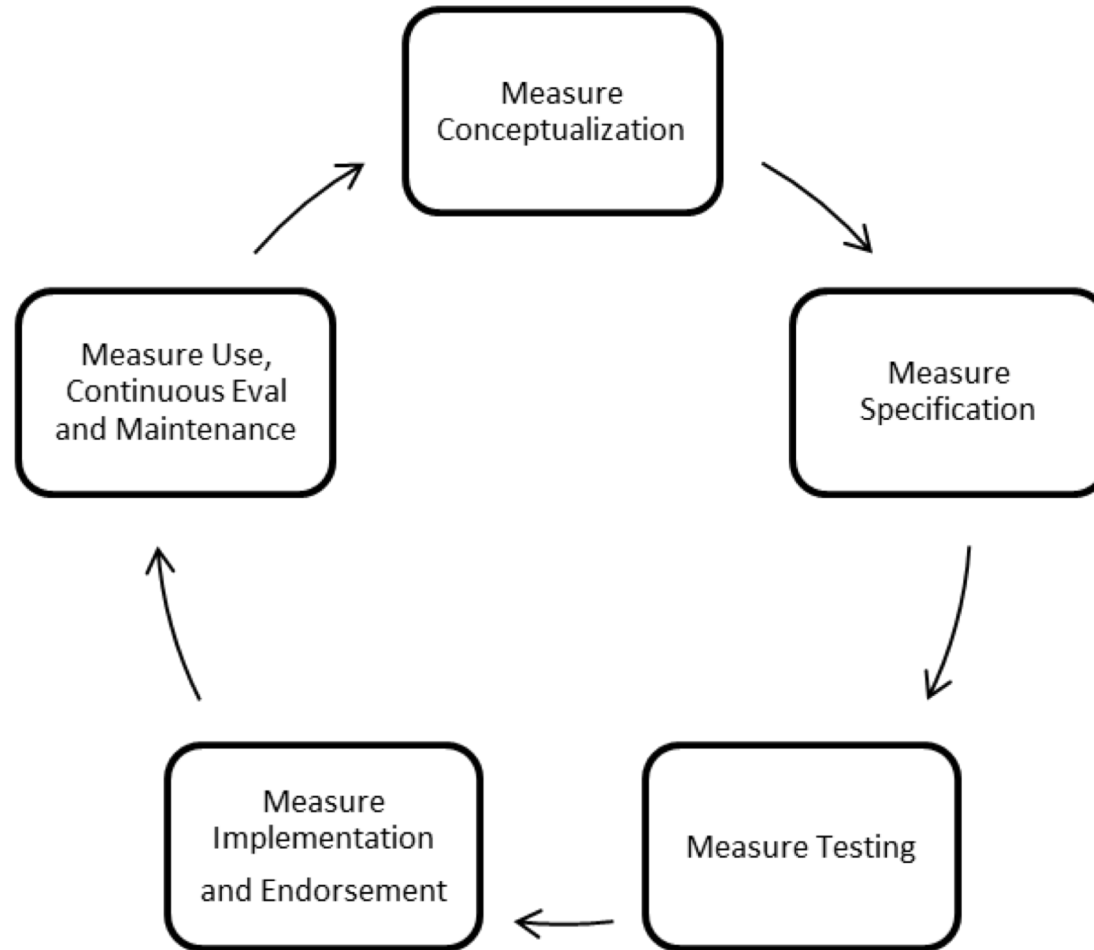
Stakeholders

- Measure Steward

- Measure Developer

- Standards Development Organizations (SDOs)

- Endorsement Agencies

- Adopting Agencies

- Measure Implementer

NQF1354, CMS31, EHDI-1a:Hearing Screening Prior to Hospital Discharge

Standards Landscape

- Vocabulary: SNOMED-CT

- Information model: QDM

- Measure definition and logic: HQMF

- Measure Reporting: QRDA

EHDI-1a Measure Specification

- Assess the proportion of births that have been screened for hearing loss prior to hospital discharge
  - Population: denominator, numerator, exclusions
  - Time: measurement period, birth, discharge
  - Place: hospital
  - Service: newborn hearing screening

EHDI-1a: Population Criteria

- Denominator: all hospital births <u>discharged</u> during the measurement period
- Initial Population =
  - AND: Occurrence A of $EncounterInpatient ends during "Measurement Period"
  - AND: Union of:
    - "Diagnosis, Active: Liveborn Newborn Born in Hospital"
    - "Diagnosis, Active: Livebirth:
    - Starts during Occurrence A of $EncounterInpatient
- Denominator =
  - AND: Initial Population

EHDI-1a: Population Criteria (cont.)

- Numerator: those who have been screened for both ears or not screened due to medical reasons
- Numerator =
  - AND: Union of:
    - Diagnostic Study, Performed: Newborn Hearing Screen Left (result: pass or refer)
    - Diagnostic Study, Performed not done: Medical reasons for "Newborn Hearing Screen left"
  - AND: Union of:
    - Diagnostic Study, Performed: Newborn Hearing Screen Right (result: pass or refer)
    - Diagnostic Study, Performed not done: Medical reasons for "Newborn Hearing Screen right"

EHDI-1a: Data Criteria

- AND: Union of:
  - Diagnostic Study, Performed: Newborn Hearing Screen Left (result: pass or refer)
  - Diagnostic Study, Performed not done: Medical reasons for "Newborn Hearing Screen left"
  - …

- Diagnostic Study, Performed: Newborn Hearing Screen Left using "Newborn hearing screen left LOINC Value Set (2.16.840.1.114222.4.1.214079.1.1.4"

- Diagnostic Study, Performed not done: Medical reasons using "Medical Reasons SNOMED value set (2.16.840.1.114222.4.1.214079.1.1.7"

EHDI-1a in HQMF

eMeasure Title	Hearing Screening Prior To Hospital Discharge		
eMeasure Identifier (Measure Authoring Tool)	31	**eMeasure Version number**	4.0.000
NQF Number	1354	**GUID**	0924fbae-3fdb-4d0a-aab7-9f354e699fde
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	CDC National Center on Birth Defects and Developmental Disabilities		
Measure Developer	CDC Early Hearing Detection and Intervention Program		
Endorsed By	National Quality Forum		
Description	This measure assesses the proportion of births that have been screened for hearing loss before hospital discharge.		
Copyright	None		
Disclaimer	These performance measures are not clinical guidelines and do not establish a standard of medical care, and have not been tested for all potential applications. The measures and specifications are provided without warranty. CMS has contracted with Mathematica Policy Research and its subcontractors, Lantana and Telligen, for the continued maintenance of this electronic measure.		
Measure Scoring	Proportion		
Measure Type	Process		
Measure Item Count	Encounter, Performed: Encounter Inpatient		
Stratification	None		
Risk Adjustment	None		
Rate Aggregation	None		
Rationale	Birthing facility staff should review the effectiveness and timeliness of screening relative to nursery discharge. Benchmarks set within the EHCP may trigger hospital or jurisdictional compliance activities, such as re-writing of procedural guidelines or re-training of screening staff.		
Clinical Recommendation Statement	None		
Improvement Notation	Improvement noted as an increase in rate.		
Reference	HRSA Title V Block Grant MCHB Performance Measure: Percentage of newborns who have been screened for hearing before hospital discharge.		
Reference	U.S. Preventive Services Task Force (http://www.ahrq.gov/clinic/uspstf/uspsnbhr.htm) Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs. Joint Committee on Infant Hearing. Pediatrics 2007;120:898-921 (http://pediatrics.aappublications.org/cgi/content/full/120/4/898?		

EHDI-1a in HQMF (cont.)

Table of Contents

Population Criteria

- **Initial Population =**
  - AND: Occurrence A of $EncounterInpatient ends during "Measurement Period"
  - AND: Union of:
    - "Diagnosis, Active: Liveborn Newborn Born in Hospital"
    - "Diagnosis, Active: Livebirth"
    - starts during Occurrence A of $EncounterInpatient
- **Denominator =**
  - AND: Initial Population
- **Denominator Exclusions =**
  - OR:
    - AND: Intersection of:
      - Occurrence A of $EncounterInpatient
      - "Encounter, Performed: Encounter Inpatient (discharge status: Patient Expired)"
    - AND NOT: Union of:
      - "Diagnostic Study, Performed: Newborn Hearing Screen Left (result: Pass Or Refer)"
      - "Diagnostic Study, Performed: Newborn Hearing Screen Right (result: Pass Or Refer)"
      - during Occurrence A of $EncounterInpatient
- **Numerator =**
  - AND: Union of:
    - "Diagnostic Study, Performed: Newborn Hearing Screen Left (result: Pass Or Refer)"
    - "Diagnostic Study, Performed not done: Medical Reasons" for "Newborn Hearing Screen Left"
    - during Occurrence A of $EncounterInpatient
  - AND: Union of:
    - "Diagnostic Study, Performed: Newborn Hearing Screen Right (result: Pass Or Refer)"
    - "Diagnostic Study, Performed not done: Medical Reasons" for "Newborn Hearing Screen Right"
    - during Occurrence A of $EncounterInpatient
- **Numerator Exclusions =**
  - None
- **Denominator Exceptions =**
  - None
- **Stratification =**
  - None

Data Criteria (QDM Variables)

- **$EncounterInpatient =**
  - "Encounter, Performed: Encounter Inpatient" satisfies all
    - (length of stay <= 120 day(s))
    - ends during "Measurement Period"

Data Criteria (QDM Data Elements)

- "Diagnosis, Active: Livebirth" using "Livebirth SNOMEDCT Value Set (2.16.840.1.114222.4.1.214079.1.1.1)"
- "Diagnosis, Active: Liveborn Newborn Born in Hospital" using "Liveborn Newborn Born in Hospital Grouping Value Set (2.16.840.1.113762.1.4.1046.6)"
- "Diagnostic Study, Performed: Newborn Hearing Screen Left" using "Newborn Hearing Screen Left LOINC Value Set (2.16.840.1.114222.4.1.214079.1.1.3)"
- "Diagnostic Study, Performed: Newborn Hearing Screen Right" using "Newborn Hearing Screen Right LOINC Value Set (2.16.840.1.114222.4.1.214079.1.1.4)"
- "Diagnostic Study, Performed not done: Medical Reasons" using "Medical Reasons SNOMEDCT Value Set (2.16.840.1.114222.4.1.214079.1.1.7)"
- "Encounter, Performed: Encounter Inpatient" using "Encounter Inpatient SNOMEDCT Value Set (2.16.840.1.113883.3.666.5.307)"
- Attribute: "Result: Pass Or Refer" using "Pass Or Refer SNOMEDCT Value Set (2.16.840.1.114222.4.1.214079.1.1.6)"
- Attribute: "Discharge status: Patient Expired" using "Patient Expired SNOMEDCT Value Set (2.16.840.1.113883.3.117.1.7.1.309)"

Supplemental Data Elements

- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity CDCREC Value Set (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer SOP Value Set (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race CDCREC Value Set (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex AdministrativeGender Value Set (2.16.840.1.113762.1.4.1)"

Risk Adjustment Variables

- None

Measure Set	Early Hearing Detection and Intervention (EHDI)

Continuous Evolution within the eCQM Ecosystem

Reporting/ Performance Period	eCQM Annual Update	EHDI-1a	Tool and Resources			Standards				
			MAT	Cypress	Bonnie	QDM	QDM-based HQMF	HQMF	HL7 QRDA Version	CMS QRDA IG
2018	May 2017	CMS31 v6	V4.6.0	V3.2 (release July 2017)	V1.6.2	V4.3	R1.4	R2.1	QRDA-I, STU R4 QRDA-III, STU R2	Summer 2017
2017	April 2016	CMS31 v5	V4.3.1	V3.0	V1.4.8 (support for QDM 4.2)	V4.2	R1.3	R2.1	QRDA-I, DSTU R3.1 QRDA-III, STU R2	Eligible Hospitals EP/Eligible Clinicians
2016	June 2015	CMS31 v4	V4.2.0	V2.7.0 (supports QRDA R3)	V1.3.7	V4.1.2	R1.1	R2.1	QRDA I, DSTU R3 QRDA III, DSTU R1	V1.0
2015	April 2014	CMS31 v3	V3.1.2	V2.6.1 (supports HL7 QRDA R2)	V1.0	V4.1.1 V4.1 V4.0	R1.0	R1	QRDA I, DSTU R2 (and July 2014 Errata) QRDA III, DSTU R1 (and June 2014 Errata)	V1.0
2014	April 2013	CMS31 v2	V1.1.1	V2.4.1	N/A	HQMF Templates	N/A	R1	QRDA I, DSTU R2 QRDA III, DSTU R1	EH V2.2 EP QRDA I V4.0 EP QRDA III V2.0
Terminologies										
SNOMED CT			International Edition is released twice a year: January 31 and July 31							
ICD-10-CM			Updated annually in July							
LOINC			New versions are released twice a year: June and December							
RxNorm			Updated monthly							

Measure implementation and reporting: Questions

- Can an agency that receives quality measure results do more to generate this information so providers can do less?

- Is it possible to shift some or all burden off care providers?

- Can a new type of system be developed that it could process the quality measure data and reduce the burden for providers without demanding more of the report receivers?

- Will a middle-man solution allow care providers to monitor and adjust their performance in real-time, rather than waiting for the entire reporting period to pass before they get measure feedback?

A Modular Solution

- Content Creator: A system that can generate standard documents in eCQM reporting

- Report Assembler (RA): A system that transforms data from one format into another format, e.g. from patient-level quality reports (QRDA-I) to aggregate-level quality reports (QRDA-III)

- Content Consumer: A system that processes data for computing eCQMs.

Use Case 1

Use Case #1

Actor Key:
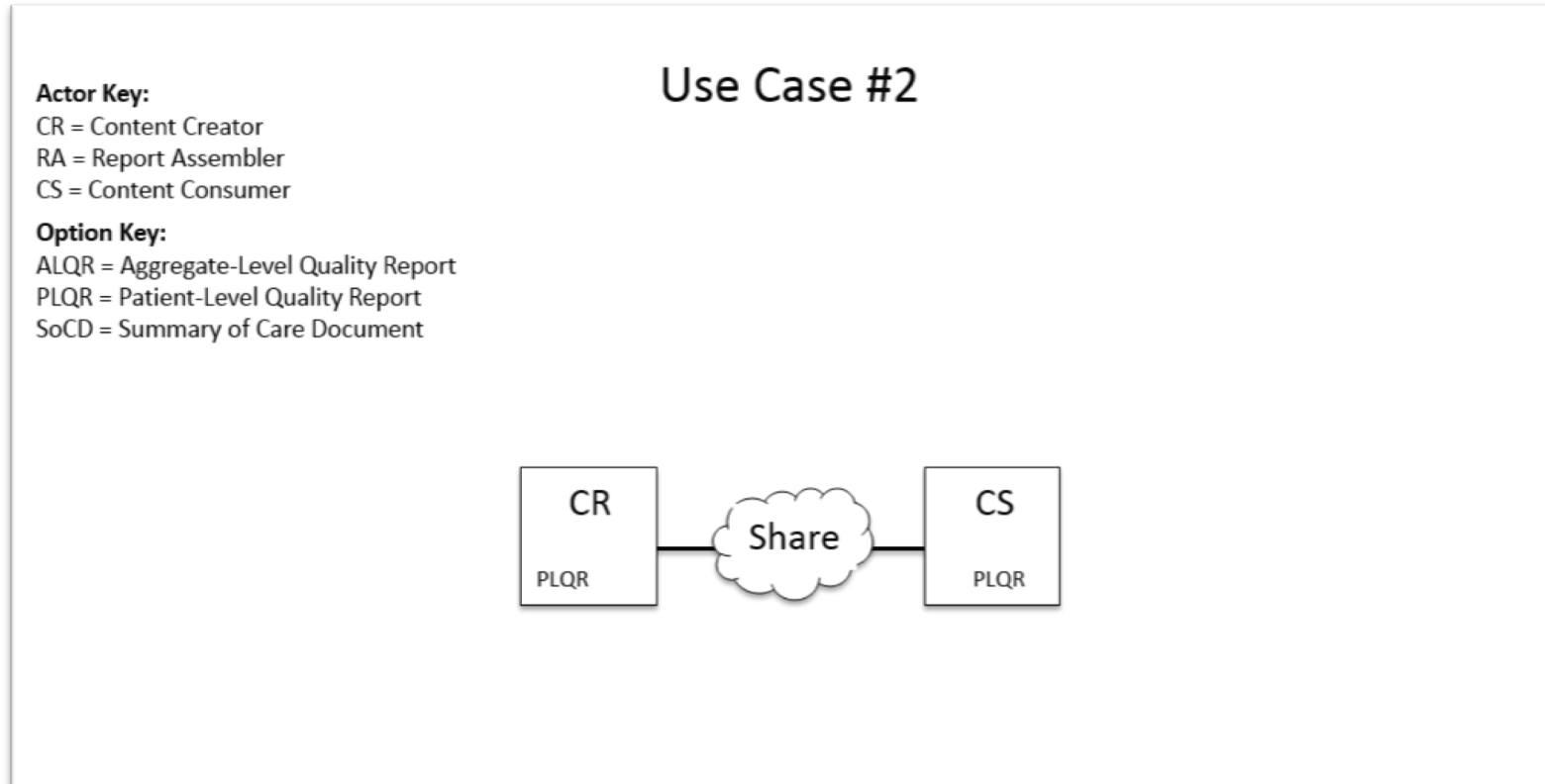CR = Content Creator
RA = Report Assembler
CS = Content Consumer

Option Key:
ALQR = Aggregate-Level Quality Report
PLQR = Patient-Level Quality Report
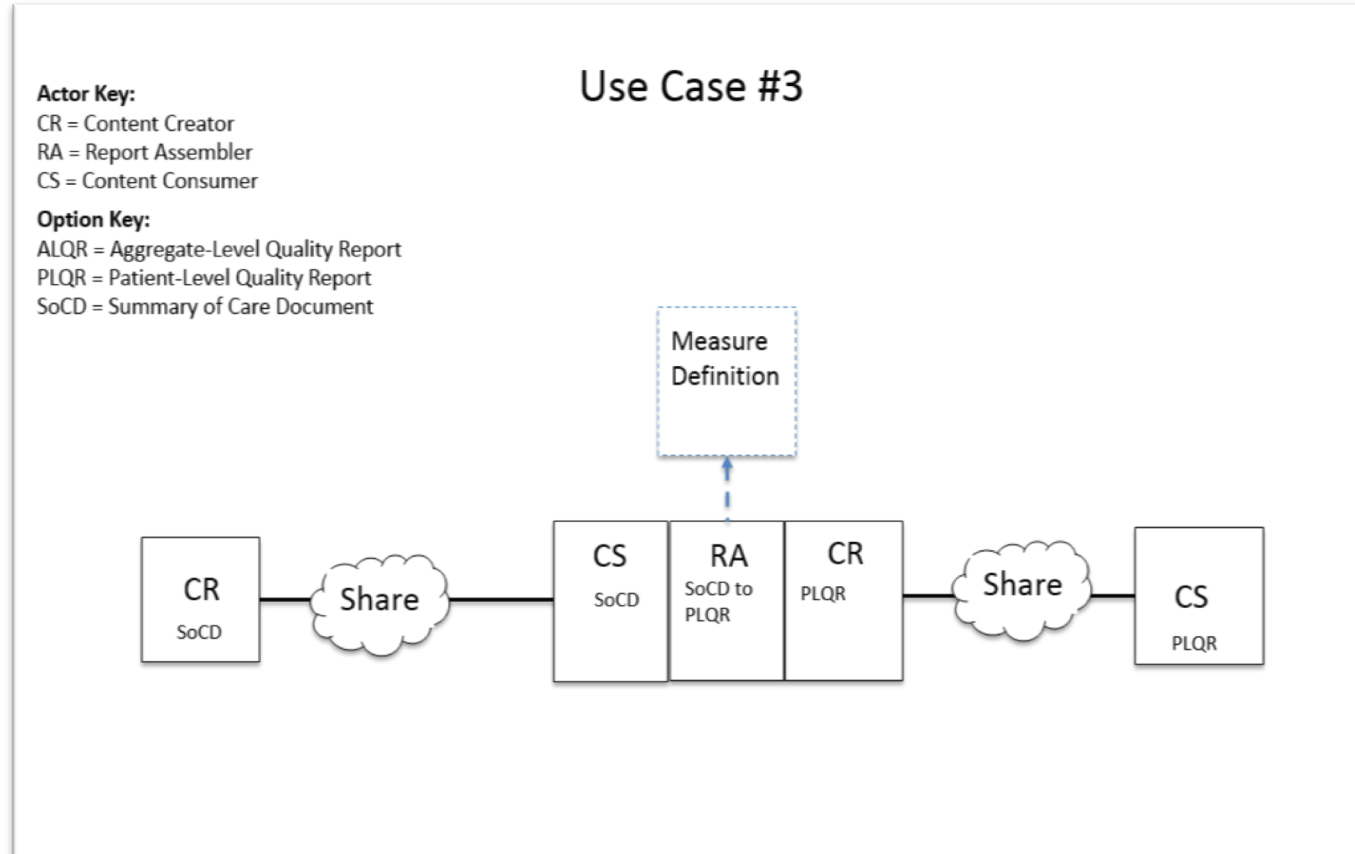SoCD = Summary of Care Document

CR
ALQR

Share

CS
ALQR

Use Case 2

Use Case 3

Conclusion and Recommendations

- Outlines the potential to achieve burden reductions with eCQM standards.

- Identifies the technical roles systems play throughout the eCQM ecosystem and shows how organizations involved in quality measure reporting can leverage interoperability to achieve efficiency, while promoting greater data transparency and consistency.