



HL7 Meaningful Use Stage 2: QRDA

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CONSULTING GROUP

Outline

- Introduction to QRDA
- Big Picture – Quality Reporting
- Creating QRDA
- QRDA Tools



QRDA in MU2

§ 170.314 (c) Clinical Quality Measures

(1) Clinical quality measures—capture and export

(i) Capture

For each and every CQM for which the EHR technology is presented for certification, EHR technology must be able to electronically record all of the data identified in the standard specified at § 170.204(c) that would be necessary to calculate each CQM. Data required for CQM exclusions or exceptions must be codified entries, which may include specific terms as defined by each CQM, or may include codified expressions of “patient reason,” “system reason,” or “medical reason.”

(ii) Export

EHR technology must be able to electronically export a data file formatted in accordance with the standards specified at **§ 170.205(h)** that includes all of the data captured for each and every CQM to which EHR technology was certified under paragraph (c)(1)(i) of this section.

(2) Clinical quality measures—import and calculate

(i) Import

EHR technology must be able to electronically import a data file formatted in accordance with the standard specified at **§ 170.205(h)** and use such data to perform the capability specified in paragraph (c)(2)(ii) of this section. EHR technology presented for certification to all three of the certification criteria adopted in paragraphs (c)(1) through (3) of this section is not required to meet paragraph (c)(2)(i).

(ii) Calculate

EHR technology must be able to electronically calculate each and every clinical quality measure for which it is presented for certification.

(3) Clinical quality measures—electronic submission

Enable a user to electronically create a data file for transmission of clinical quality measurement data: (i) In accordance with the standards specified at **§ 170.205(h) and (k)**; and (ii) That can be electronically accepted by CMS.



What is QRDA?

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

- QRDA Category I – Single patient Report
- QRDA Category II - Patient List Report
- QRDA Category III - Aggregate Report

These are Draft Standards for Trial Use



QRDA – a kind of Templated CDA

A QRDA document
using CCD templates plus others

A CDA document using CCD templates

CCD

Demographics

Allergies

...

Family History

Social History

Vital Signs

Medications

Problems

Payer

Chief Complaint

Discharge
Diagnosis

Mode of
Transport

Surgical Finding

Discharge
Diet

New Template...

CDA



BIG PICTURE – QUALITY REPORTING



Standards are a Prerequisite to Functionality

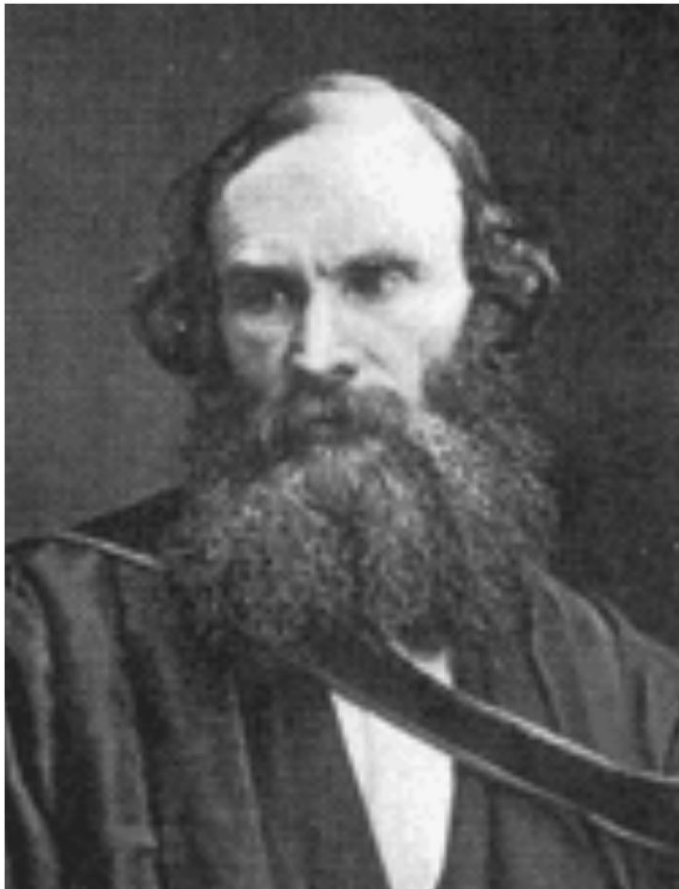
*“If you cannot measure it,
you cannot improve it.”*

Lord Kelvin (1824-1907)

*“If you cannot standardize
it, you cannot measure it.”*



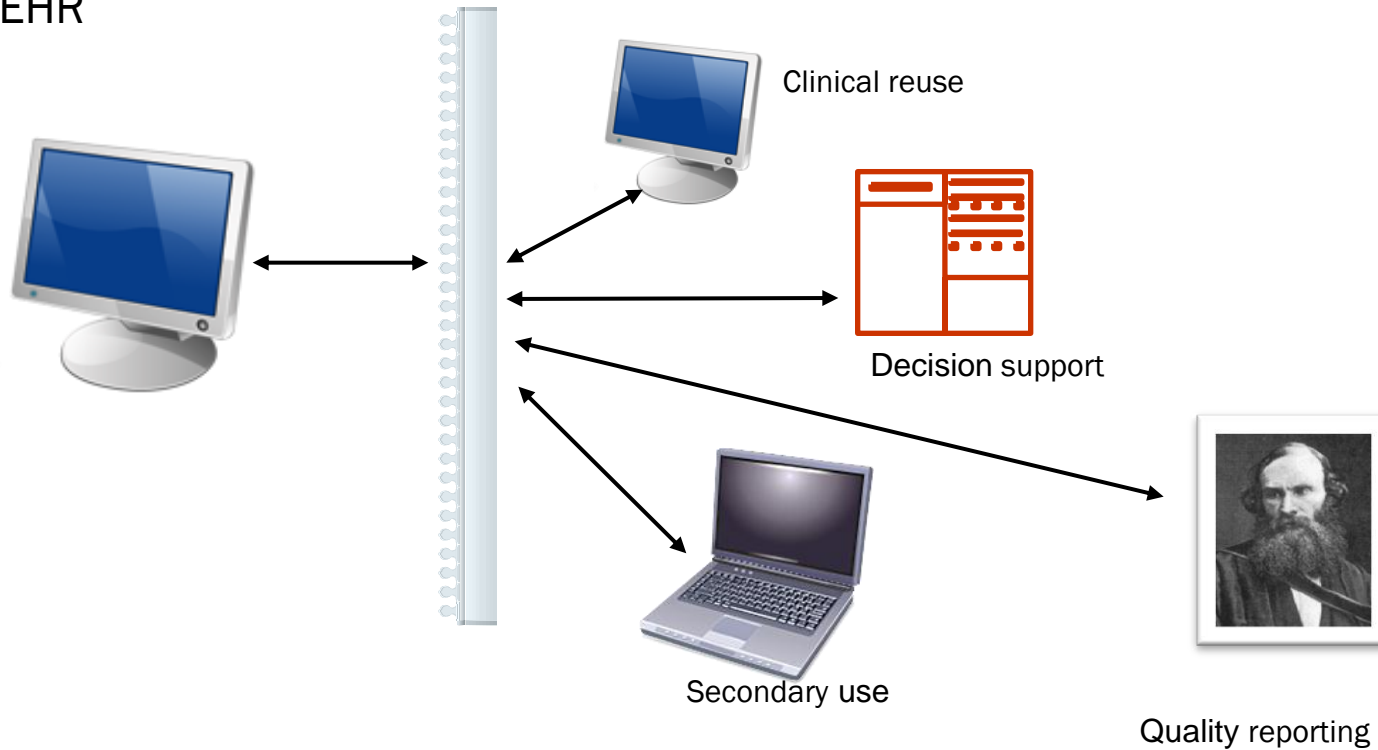
Bob Dolin (2011)



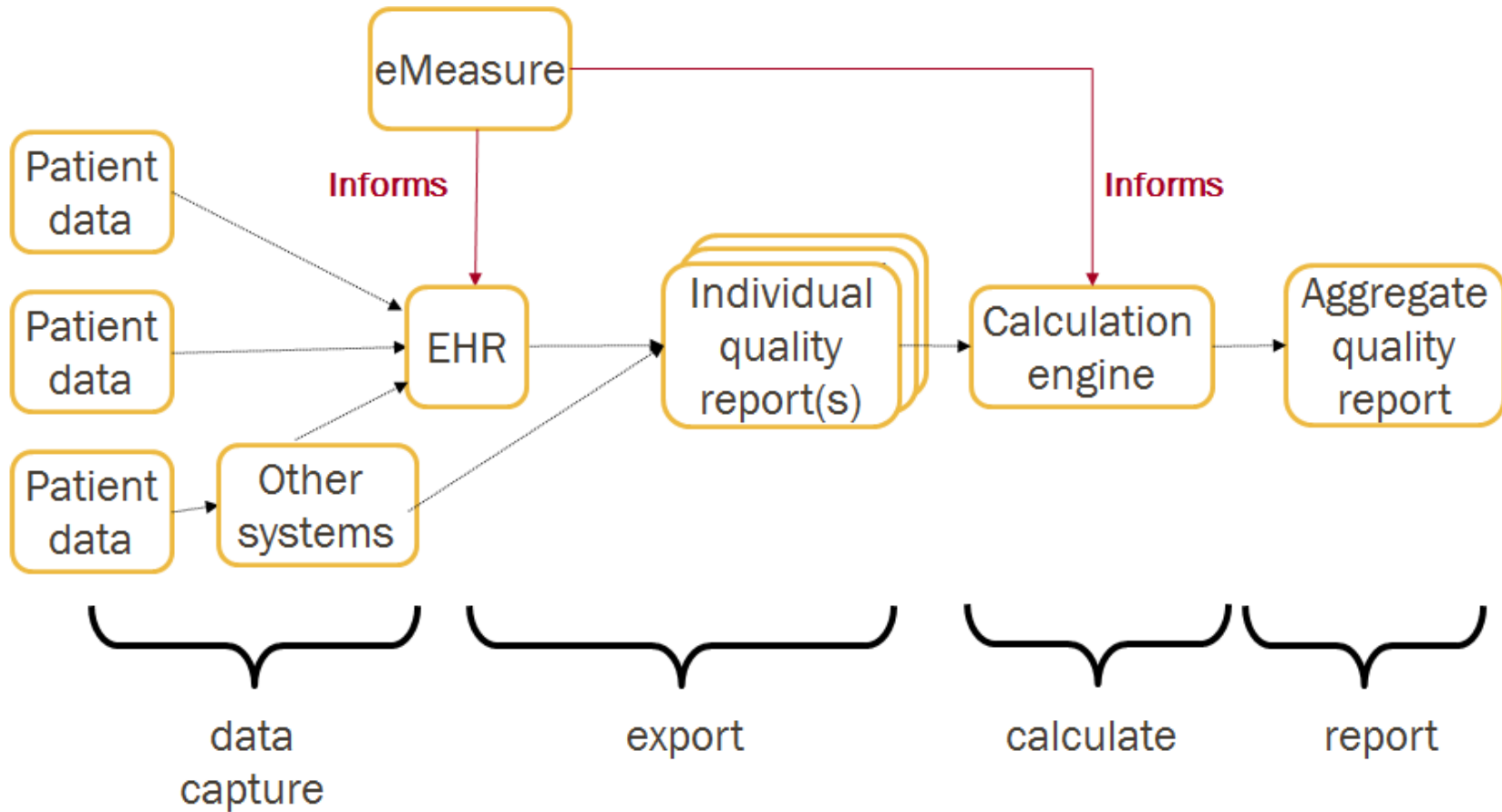
MU2 - Big Picture View

MU-Certified
EHR

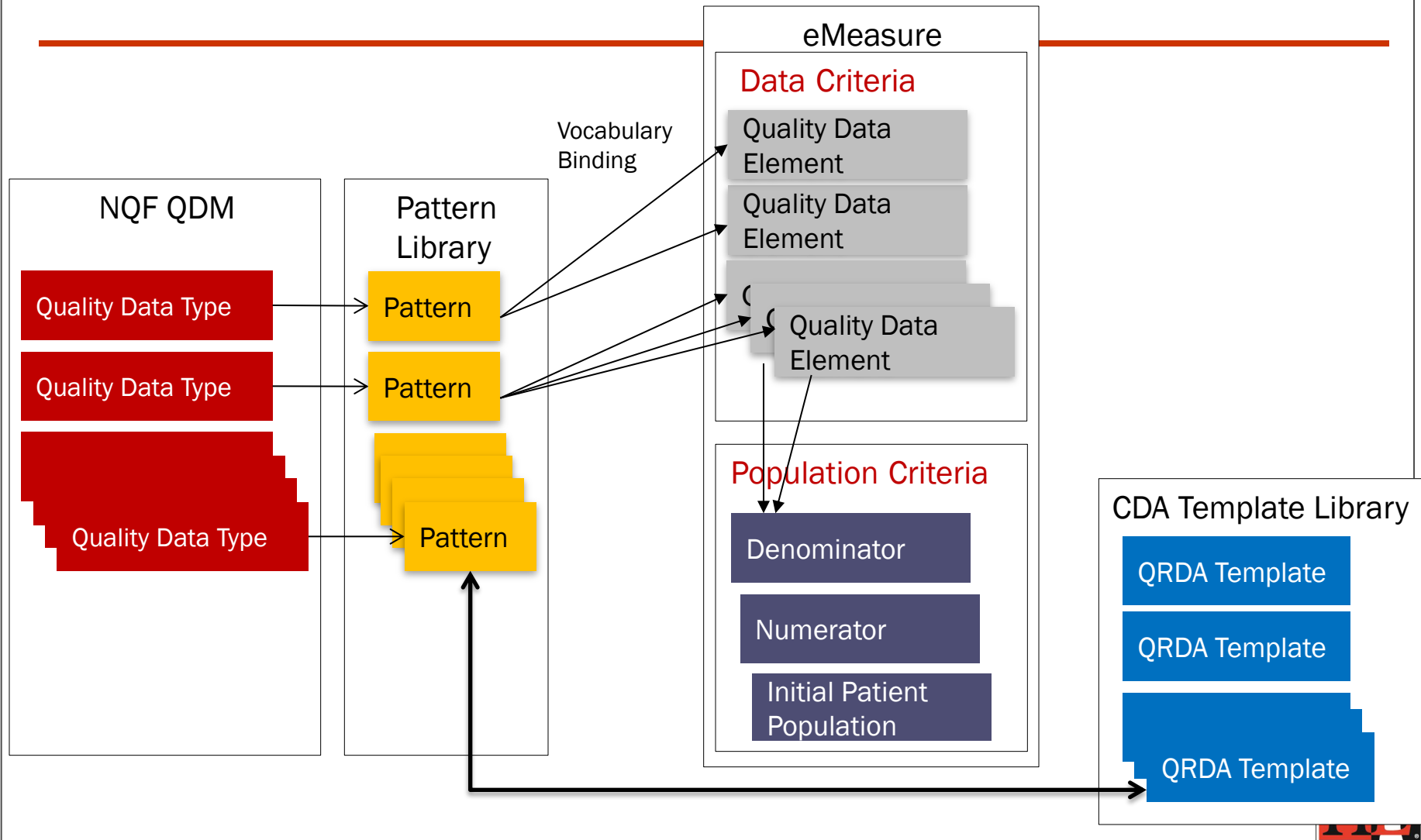
Meaningful Use of EHR Data



MU2 and Quality Reporting



MU2 – Integrated Standards



CREATING QRDA_s



QRDA I – Single Patient Report

Contact info	1020 Healthcare Drive Burlington, MA 02368, US Tel: (555)555-1003
Author	Good Health Report Generator
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
Contact info	21 North Ave. Burlington, MA 02368, US Tel: (555)555-1003
Document maintained by	Good Health Hospital
Contact info	21 North Ave. Burlington, MA 02368, US Tel: (555)555-1003

Table of Contents

- [Measure Section](#)
- [Reporting Parameters](#)
- [Patient Data](#)

Measure Section

eMeasure Title	Version neutral identifier	eMeasure Version Number	NQF eMeasure Number	eMeasure Identifier (MAT)	Version specific identifier
Children's Asthma Care (CAC-1) Relievers for Inpatient Asthma	dc78ee5d-1487-4d79-84c3-1dfdaf0781c	1	0143	93	8a4d92b2-373f-82e2-0137-7b9e21cc5c8f
Children's Asthma Care (CAC-2) Systemic Corticosteroids for Inpatient Asthma	d7c71959-3991-457c-b8ea-774238c87248	1	0144	106	8a4d92b2-373f-82e2-0137-baed84f5f93

Reporting Parameters

- Reporting period: 01 Jan 2011 - 31 Dec 2011

Patient Data

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



Creating QRDA-I's

- The data elements to be included in a QRDA-I instance are based on the eMeasures cited by that QRDA-I. All data elements for all eMeasures cited that are present in the EHR should be included
- Construction heuristics
 - Identify relevant data elements
 - Extract relevant data elements from EHR
 - Populate corresponding CDA templates



Identify relevant data elements

(1) identify relevant eMeasures

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<templateId root="2.16.840.1.113883.10.20.24.2.3"/>
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<title>Measure Section</title>
<text>
```

eMeasure Title	Version neutral identifier	eMeasure Version Number	NQF eMeasure Number	eMeasure Identifier (MAT)	Version specific identifier
Children's Asthma Care (CAC-1) Relievers for Inpatient Asthma	dc78ee5d-1487-4d79-84c3-1dfdaff0781c	1	0143	93	8a4d92b2-373f-82e2-0137-7b9e21cc5c8f
Children's Asthma Care (CAC-2) Systemic Corticosteroids for Inpatient Asthma	d7c71959-3991-457c-b8ea-774238c87248	1	0144	106	8a4d92b2-373f-82e2-0137-baed84f55f93

</text>

<entry>

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  <reference typeCode="REFR">
    <externalDocument classCode="DOC" moodCode="EVN">
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      <!-- NQF Number --> <id root="2.16.840.1.113883.3.560.1" extension="0143"/>
      <!-- eMeasure Measure Authoring Tool Identifier--> <id root="2.16.840.1.113883.3.560.101.2" extension="93"/>
      <!-- SHOULD This is the title of the eMeasure -->
      <text>Children's Asthma Care (CAC-2) Systemic Corticosteroids for Inpatient Asthma</text>
      <!-- eMeasure version neutral id --> <setId root="dc78ee5d-1487-4d79-84c3-1dfdaff0781c"/>
      <!-- eMeasure Version number --> <versionNumber value="1"/>
    </externalDocument>
  </reference>
</organizer>
```

</entry>

</entry>...</entry>

</section>

Identify relevant data elements



- (1) Identify relevant eMeasures
- (2) For each eMeasure, identify relevant data elements*

Quality Data Element	Quality Data Type Pattern ID	Value Set Name	Value Set ID
Diagnosis, Active: Pregnancy	2.16.840.1.113883.3.560.1.2	Pregnancy Grouping Value Set	2.16.840.1.113883.3.600.0001.18
Medication, Administered: Aspirin	2.16.840.1.113883.3.560.1.14	Aspirin RxNorm Value Set	2.16.840.1.113883.3.666.05.626
Medication, Administered: Beta Blocker	2.16.840.1.113883.3.560.1.14	Beta Blocker RxNorm Value Set	2.16.840.1.113883.3.117.35
...			

*includes data criteria, stratification variables, supplemental data elements, risk adjustment variables, etc



Extract relevant data elements from EHR

-  **Scoop and Filter:** QRDA-I sends what is in the 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”.



Populate corresponding CDA templates

- For each data element, identify the corresponding CDA template

Quality Data Element	Quality Data Type Pattern ID	Value Set Name	Value Set ID	CDA Template Name	CDA Template Library ID
Diagnosis, Active: Pregnancy	2.16.840.1.113 883.3.560.1.2	Pregnancy Grouping Value Set	2.16.840.1.11388 3.3.600.0001.18	Diagnosis Active	2.16.840.1.1 13883.10.20. 24.3.11
Medication, Administered: Aspirin	2.16.840.1.113 883.3.560.1.14	Aspirin RxNorm Value Set	2.16.840.1.11388 3.3.666.05.626	Medication Administered	2.16.840.1.1 13883.10.20. 24.3.42
Medication, Administered: Beta Blocker	2.16.840.1.113 883.3.560.1.14	Beta Blocker RxNorm Value Set	2.16.840.1.11388 3.3.117.35	Medication Administered	2.16.840.1.1 13883.10.20. 24.3.42
...					



QRDA III – Aggregate Report

EHR Certification Number	medical record, device 1a2b3c (ONC) 98765 ()
Legal authenticator	Good Health Hospital signed at August 11, 2012
Document maintained by	Good Health Hospital

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

eMeasure Title	Version neutral identifier	eMeasure Version Number	NQF eMeasure Number	eMeasure Identifier (MAT)	Version specific identifier
Anticoagulation Therapy for Atrial Fibrillation/Flutter	03876d69-085b-415c-ae9d-9924171040c2	1	0436	71	8a4d92b2-3887-5df3-0139-013b0c87524a

Member of Measure Set: Clinical Quality Measure Set 2011-2012 - b6ac13e2-beb8-4e4f-94ed-fcc397406c8

- **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: 300
 - White: 350
 - Asian: 350
 - Payer - Medicare: 250
 - Payer - Medicaid: 550
 - Zipcode 92543: 15
- **Denominator:** 500
 - Male: 200
 - Female: 300
 - Not Hispanic or Latino: 175
 - Hispanic or Latino: 325
 - 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: 6
- **Denominator Exclusions:** 20
 - Male: 8



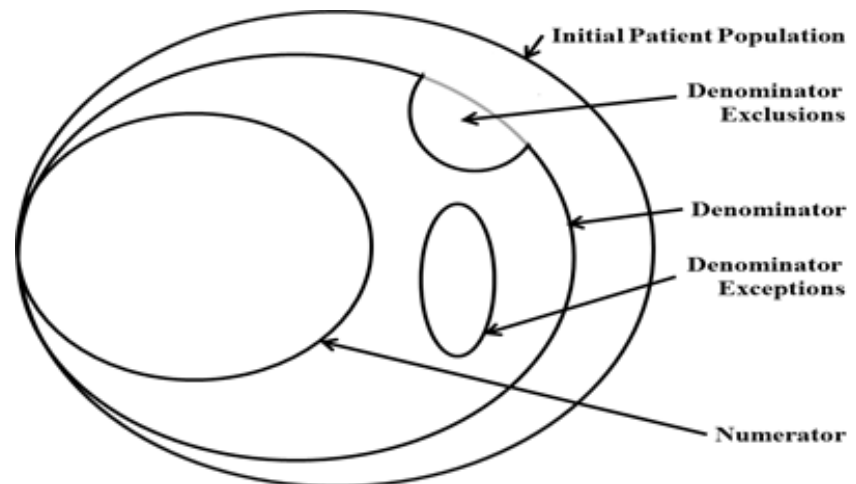
Creating QRDA-III's

- Calculate counts
- Populate corresponding CDA templates



Calculate counts

- **For each patient, determine which population(s) they fall in to**
 - **Initial Patient Population:** Patient meets the IPP criteria.
 - **Denominator:** Patient meets IPP criteria AND meets DENOM criteria.
 - **Denominator Exclusions:** Patient meets DENOM criteria AND meets EXCL criteria.
 - **Numerator:** Patient meets DENOM criteria, AND does not meet EXCL criteria, AND meets NUMER criteria.
 - **Denominator Exceptions:** Patient meets DENOM criteria, AND does not meet EXCL criteria, AND does not meet NUMER criteria, AND meets EXCEP criteria.



See CMS Measures Management Blueprint for detailed calculation instructions

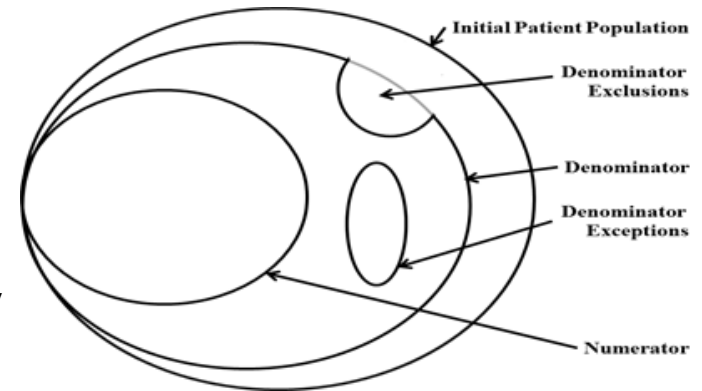
<http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/MeasuresManagementSystemBlueprint.html>



Calculate counts - Examples

■ eMeasure:

- **IPP:** all patients aged 65 years and older with an active diagnosis of diabetes mellitus.
- **DENOM:** equals IPP.
- **EXCL:** bilateral blindness
- **NUMER:** dilated eye exam for diabetic retinopathy
- **EXCEP:** bed confinement status in a community where mobile eye-exam imaging is unavailable



■ Examples

- 75yo male with diabetes. No mention of blindness in chart. Documented eye exam.
- 75yo male, with diabetes. No mention of blindness in chart. No mention of eye exam in chart. No mention in chart that he is bed bound.
- 85yo male with diabetes. No mention of blindness in chart. Documented eye exam. Known to be confined to bed in a community where mobile eye-exam imaging is unavailable.

Populate corresponding CDA templates

Measure Section

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Anticoagulation Therapy for Atrial Fibrillation/Flutter	03876d69-085b-415c-ae9d-9924171040c2	1	0436	71	8a4d92b2-3887-5df3-0139-013b0c87524a

Member of Measure Set: Clinical Quality Measure Set 2011-2012 - b6ac13e2-beb8-4e4f-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: 300
 - White: 350
 - Asian: 350
 - Payer - Medicare: 250
 - Payer - Medicaid: 550
 - Zipcode 92543: 15
- Denominator: 500
 - Male: 200
 - Female: 300
 - Not Hispanic or Latino: 175
 - Hispanic or Latino: 325
 - Black: 150

Measure Section

➤ Measure Reference and Results

- Performance Rate
- Measure Data (IPP)
 - Aggregate Count (1000)
 - Supplemental Data Elements
- Measure Data (DENOM)
 - Aggregate Count (500)
 - Supplemental Data Elements
- ...

➤ Measure Reference and Results



QRDA TOOLS



CMS Web Site

- http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/2014_ClinicalQualityMeasures.html
- CMS home page for MU2 Clinical Quality Measures



QRDA Implementation Guide

- Definitive source
- Construction rules and heuristics
- Complete template library
- eMeasure to QRDA mapping tables



eSpecification Navigator

- http://cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/eCQM_Library.html
- Library of all MU2 eMeasures.
For each measure:
 - Quality Data Elements
 - Value Sets
 - CDA templates
 - QRDA-I sample file

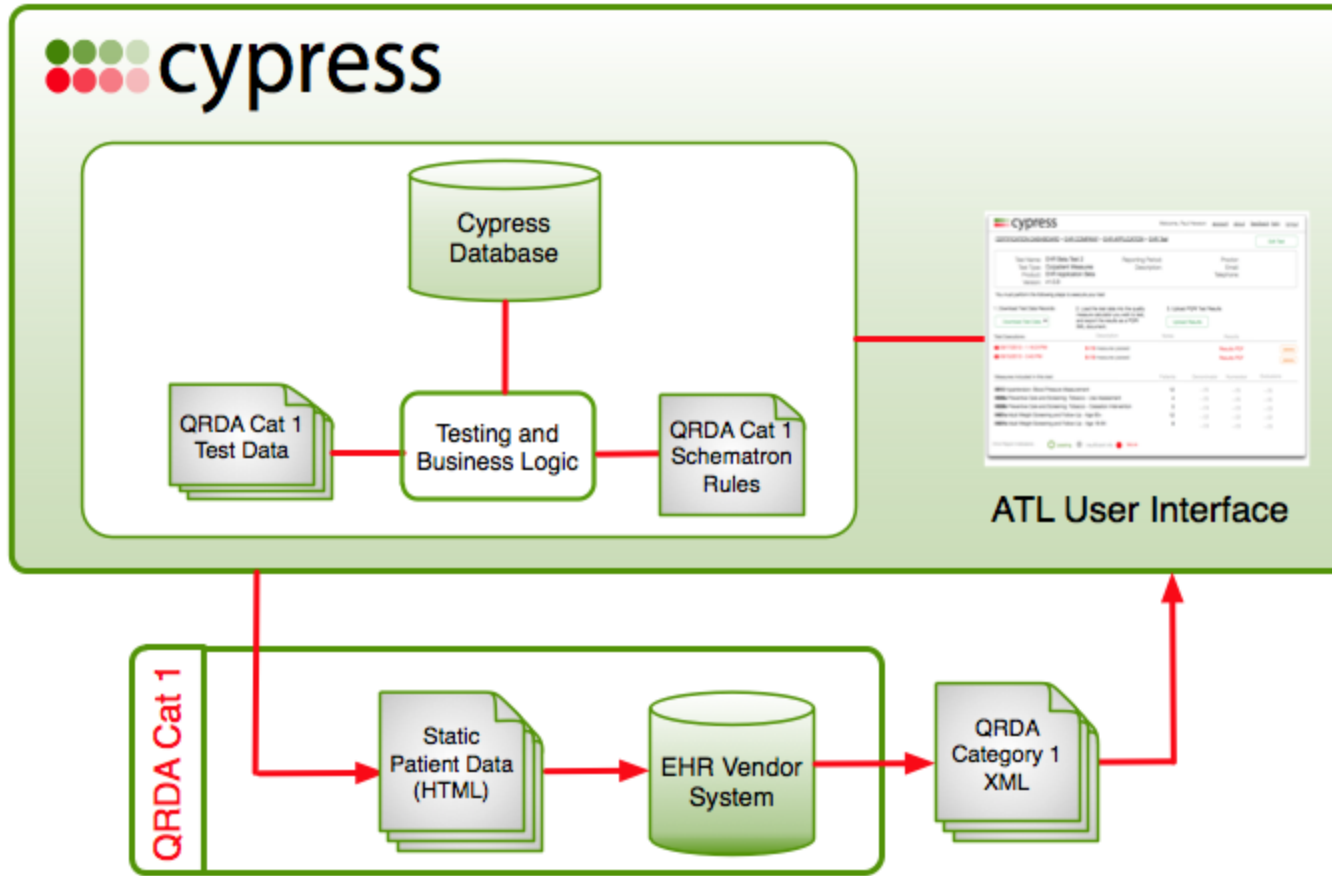


Cypress

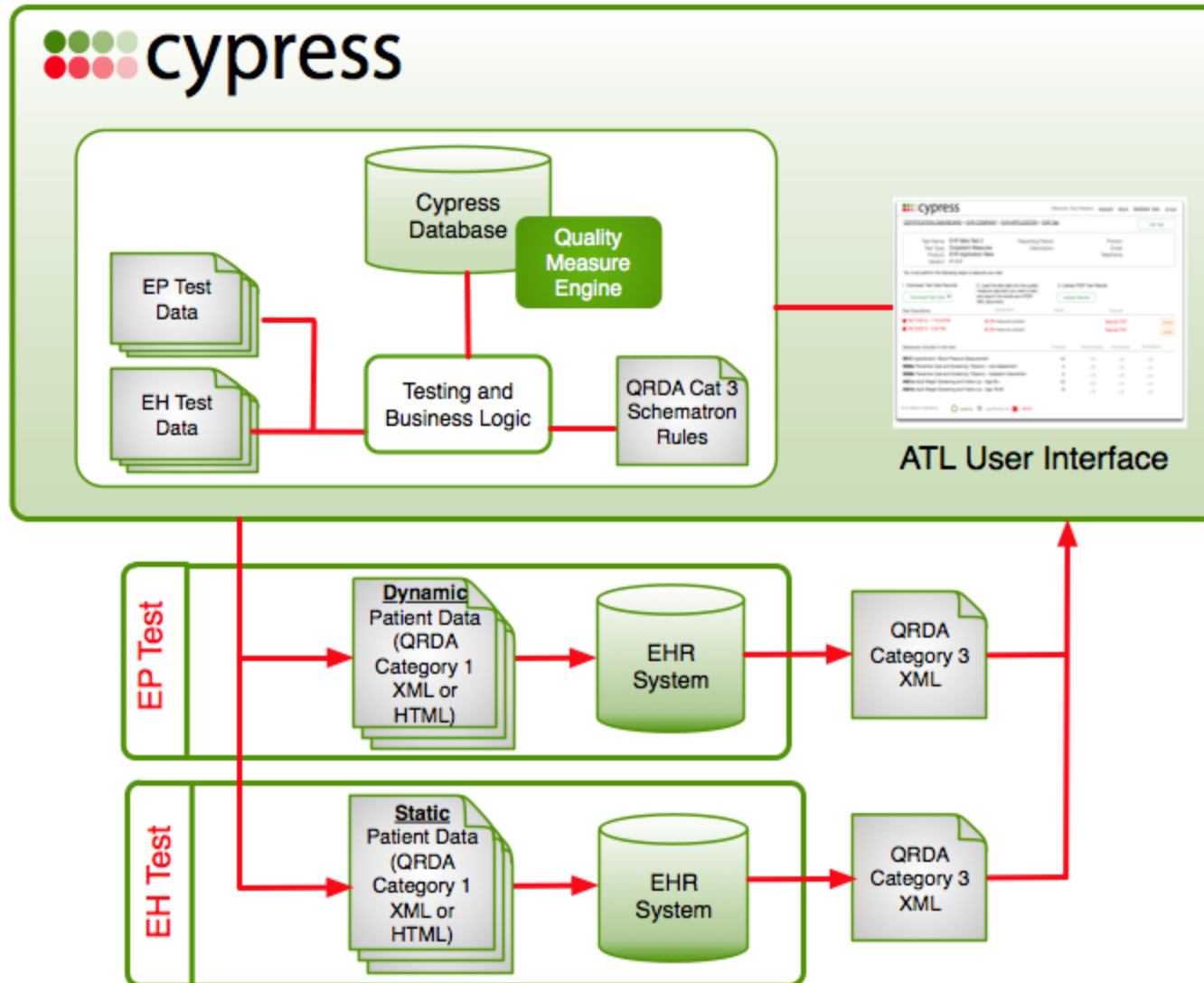
- <http://projectcypress.org/>
- MU2 CQM Testing and Certification tool:
 - Validate QRDA-I instances (against sample data)
 - Validate QRDA-III instances (against sample data)



Cypress – QRDA-I testing



Cypress – QRDA-III testing



PopHealth

- <http://projectpophealth.org/>
- (~ mid 2013) Calculates a QRDA-III, given a batch of QRDA-I's and eMeasures.



Thank you!

- Bob Dolin, MD, FACP
Bob.Dolin@LantanaGroup.com



Your Questions....



Upcoming HL7 Events

- Working Group Meeting in Atlanta, May 5-10
- Certification Exam Preparation Webinars:
Starting May 20 – June 27

