

# "Pioneers in Quality™ Electronic Clinical Quality Measure (eCQM) Clinical Quality Language (CQL) Basics for Hospitals"

November 29, 2018  
12:00 – 1:00 p.m. ET



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Monday 9:19 CST, August 20, 2018

## Pioneers in Quality

Pioneers in Quality - Home

**Pioneers in Quality™ Recognition**

- Pioneers in Quality Proven Practices Collection
- 2017 Pioneers in Quality™ Hospital eCQM Contributor Recognition Lists

**2017 Annual Report on Quality and Safety**

- America's Hospitals: Improving Quality and Safety – The Joint Commission's Annual Report 2017

**Press Releases**

- Pioneers in Quality™ Program Announces 13 Advisory Panel Members
- Joint Commission Launches Innovative New Pioneers in Quality Program

**Questions about the program**

- Contact Us



improvement

collection

quality

data

stories

**2018 Call for Proven Practices**

The Joint Commission seeks eCQM success stories to feature as part of the "Pioneers in Quality™: Proven Practices Collection." [Enter your eCQM success stories](#) by April 13 to be considered for 2018 recognition by The Joint Commission. For additional information about the Proven Practices Collection and types of practices sought, see the [submission page](#).

About the Program

Pioneers in Quality (PIQ) is a Joint Commission program to assist hospitals on their journey towards electronic clinical quality measure adoption that includes educational programs (e.g., webinars for CEUs), a resource portal, recognition categories, an advisory council, a modified annual report, speaker's bureau outreach, a peer – to – peer solution exchange, as well as having a strong focus on partnering with hospitals to provide the highest level of quality care for patients and their families.

[Facts about Pioneers in Quality™](#)

**eCQM FAQs**

- What is a value set?
- Why are eCQM rates different from chart-abstracted measure rates?
- Where can I find eCQM specifications?

[View More](#)

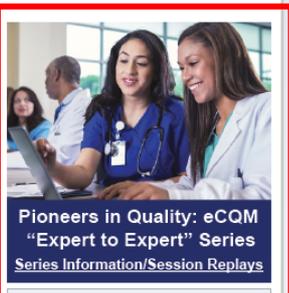
**Program FAQs**

- What is Pioneers in Quality™?
- What is the Pioneers in Quality™ recognition?
- What does a hospital have to do to earn Pioneers in Quality™ recognition?

[View More](#)

**Quick Links**

**Podcast**



Pioneers in Quality: eCQM "Expert to Expert" Series Series Information/Session Replays

Promotional Video



Webinar Replays / Related Documentation

- Joint Commission 2018 eCQM Direct Data Submission Platform: Your Questions Answered
- 2018 Pioneers in Quality: Learnings from 2016 eCQM Results, Exceptions and Exclusions
- Pioneers in Quality™: Joint Commission 2017-2018 ORYX Reporting Requirements and eCQM Direct Submission
- Pioneers in Quality™ Proven Practices: Ensuring eCQM Accuracy
- Pioneers in Quality™ Proven Practices: Establish your



## **At the end of this session, participants will be able to:**

- Understand basic concepts about the new Clinical Quality Language (CQL) eCQM logic expression language
- Prepare for implementation of the CQL logic expression language for the 2019 eCQM reporting period
- Know where to find additional resources and ask questions about eCQMs and CQL logic



# “Pioneers in Quality™ eCQM Clinical Quality Language (CQL) Basics for Hospitals”

## **This program is designed to be interactive.**

- » Ask questions through the chat box during our Q&A session
- » When slides are posted, visit the URLs for additional reference and educational content

**THE WEBINAR REPLAY AND THE PDF OF THE SLIDEDeck WILL BE AVAILABLE ON THE JOINT COMMISSION WEBSITE AND AN EMAIL WILL BE SENT TO ALL THAT REGISTERED WITH THE LOCATION WHEN THEY ARE POSTED.**



## As an added feature, we also are providing CE credits for all of our Pioneers in Quality™ Webinars.

This webinar is approved for 1.0 Continuing Education Credit from:

- » Accreditation Council for Continuing Medical Education (ACCME) (AMA PRA Category 2 Credit™)
- » American Nurses Credentialing Center (ANCC)
- » American College of Healthcare Executives (ACHE)
- » California Board of Registered Nursing
- » International Association for Continuing Education and Training (IACET) (.1 credit)



## Continuing Education Credit

**Continuing Education credits are available for the live webinar presentation only.** Credits will not be available for webinar replays. To claim credits, you must have:

- » **Individually registered** for the webinar through The Joint Commission’s GotoWebinar invitation.
- » **Listened to the webinar in its entirety.** Only those listening live on the day of the call will be eligible to receive credit.
- » **Completed a post-program evaluation/attestation.** A link to the post-program evaluation/attestation will be sent to your registered email 24-48 hours after the webinar. After completing the survey, you will receive a printable certificate to download. Please note: The survey will close approximately 2 weeks after the “live” webinar.



## Disclosure Statement

These staff and speakers have disclosed that neither they nor their spouses/partners have any financial arrangements or affiliations with corporate organizations that either provide educational grants to this program or may be referenced in this activity:

- » Tricia Elliott, MBA, CPHQ, Director of Quality Measurement, Department of Quality Measurement, The Joint Commission
- » Bryn Rhodes, ESAC, Inc. (ESAC, Inc. is a Centers for Medicare & Medicaid Services subcontractor)

## Background

- » CQL is a Health Level Seven International (HL7) standard designed to unify the expression of logic for electronic clinical quality measures (eCQMs) and Clinical Decision Support (CDS).
- » CQL provides the ability to better express logic defining measure populations to improve the accuracy and clarity of eCQMs.
- » Benefits of CQL:
  - Improved expressivity
  - More precise/unambiguous
  - Can share logic between measures
  - Can share logic with decision support
  - Can be used with multiple information data models (e.g., Quality Data Model [QDM], Fast Healthcare Interoperability Resources [FHIR])
  - Simplifies calculation engine implementation

## CQL Transition

- » eCQMs transitioned to use the CQL standard for logic expression beginning with the CY 2019 reporting period for Eligible Hospitals and Critical Access Hospitals (CAHs), and CY 2019 performance period for Eligible Professionals (EPs) and Eligible Clinicians for the following programs:
  - Hospital Inpatient Quality Reporting Program
  - Medicare and Medicaid Promoting Interoperability Programs (previously known as the Medicare and Medicaid Electronic Health Record Incentive Program)
  - Quality Payment Program: The Merit-based Incentive Payment System (MIPS) and Alternative Payment Models
  - Comprehensive Primary Care Plus
- » To support the transition, CMS published CQL-based eCQMs in Spring 2018



“Pioneers in Quality™ eCQM Clinical Quality Language (CQL) Basics for Hospitals”

# WHAT IS CQL?

# Quality Measurement

- » What is a quality measure?
  - A tool to assess performance related to a specific clinical process, structure, or outcome
- » What is an electronic Clinical Quality Measure (eCQM)?
  - Electronic representation of a quality measure with the goal of enabling the measure to be evaluated as automatically as possible

## CMS 104 – Description

Ischemic stroke patients prescribed or continuing to take antithrombotic therapy at hospital discharge

Questions “about” the description:

- Who said it?
- When did they say it?
- What evidence supports it?
- How should I use it?

Questions about the content of the description:

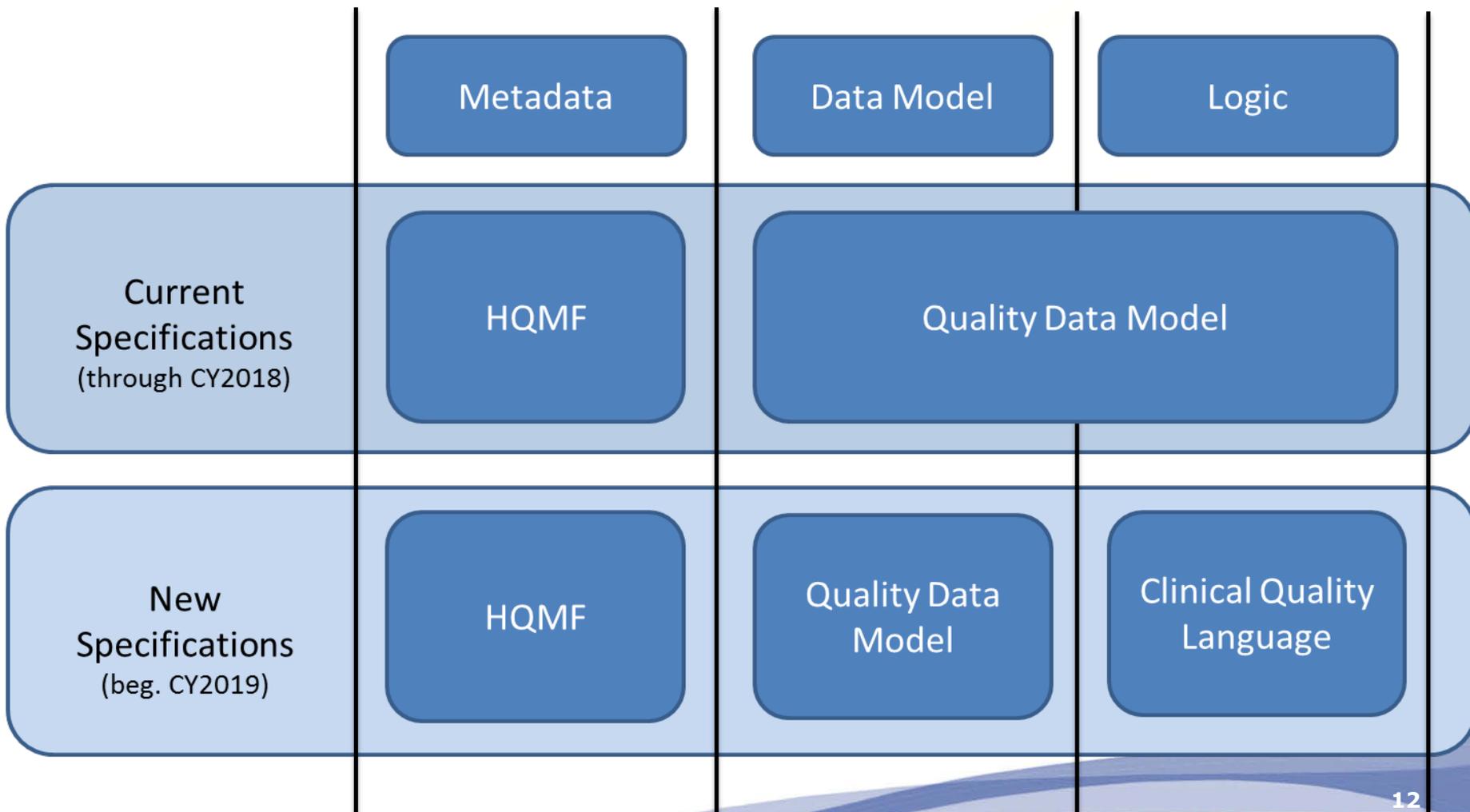
- What kinds of “things” does it talk about?
- What do those “things” look like?
- What are the relationships between them?
- What are the criteria that apply to them?

Metadata

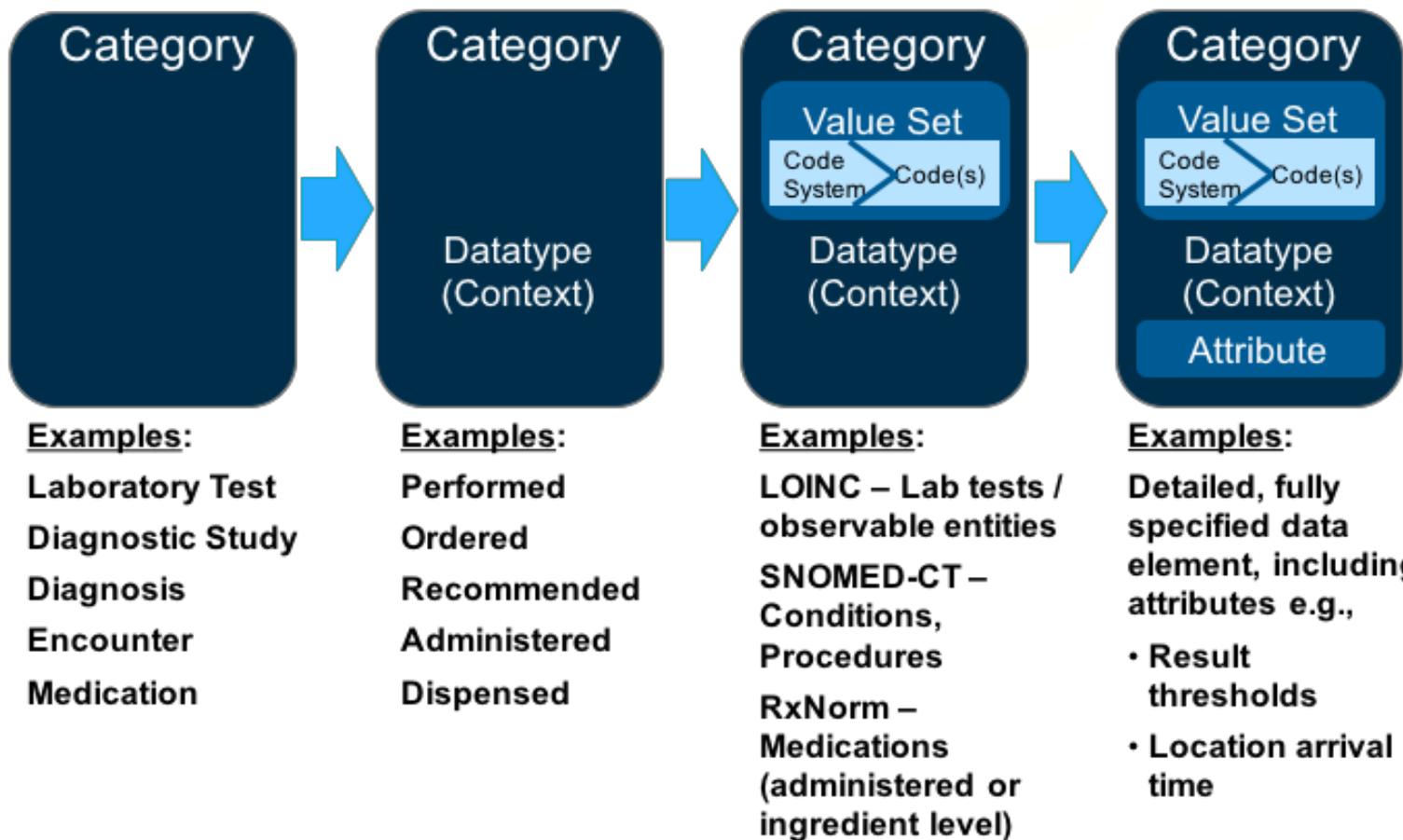
Data Model

Logic

## eCQM Representation



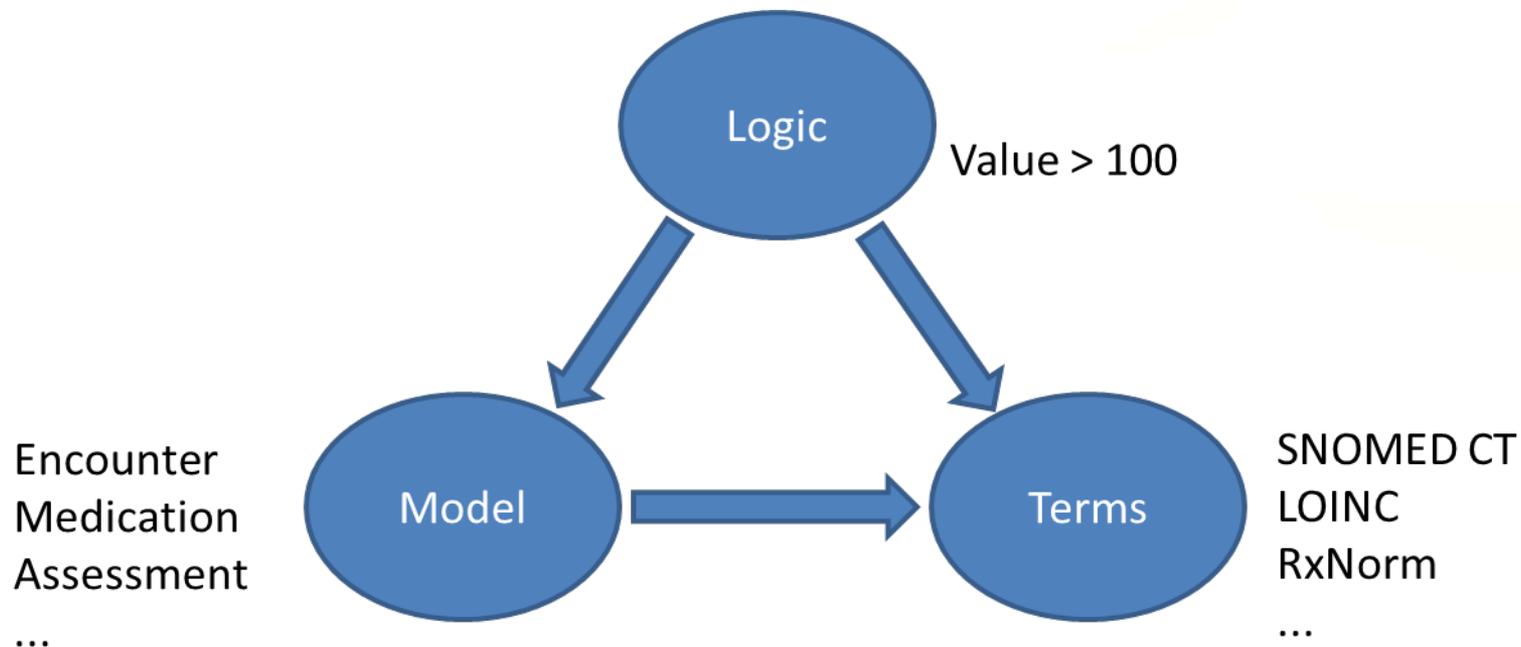
## QDM Data Types



## Encounter, Performed

- » Data elements that meet criteria using this datatype should document that the encounter indicated by the QDM category and its corresponding value set is in progress or has been completed.
- » Encounter, Performed has the following attributes:
  - Id
  - Code
  - Relevant Period
  - Admission Source
  - Diagnoses
  - Discharge Disposition
  - Length of Stay
  - Negation Rationale
  - Principal Diagnosis
  - Author Datetime
  - Facility Locations

## Components of Sharing Logic



## What is CQL?

- » A standard language for expressing clinical knowledge that is
  - Readable
  - Shareable
  - Computable



“Pioneers in Quality™ eCQM Clinical Quality Language (CQL) Basics for Hospitals”

# CQL TOUR



# Population Criteria – CMS 104 (Discharged on Antithrombotic Therapy)

## Population Criteria

### ▲ Initial Population

TJC."Encounter with Principal Diagnosis and Age"

### ▲ Denominator

TJC."Ischemic Stroke Encounter"

### ▲ Denominator Exclusions

TJC."Ischemic Stroke Encounters with Discharge Status"  
union TJC."Comfort Measures during Hospitalization"

### ▲ Numerator

TJC."Ischemic Stroke Encounter" IschemicStrokeEncounter  
with "Antithrombotic Therapy at Discharge" DischargeAntithrombotic  
such that DischargeAntithrombotic.authorDatetime during IschemicStrokeEncounter.relevantPeriod

### ▲ Numerator Exclusions

None

### ▲ Denominator Exceptions

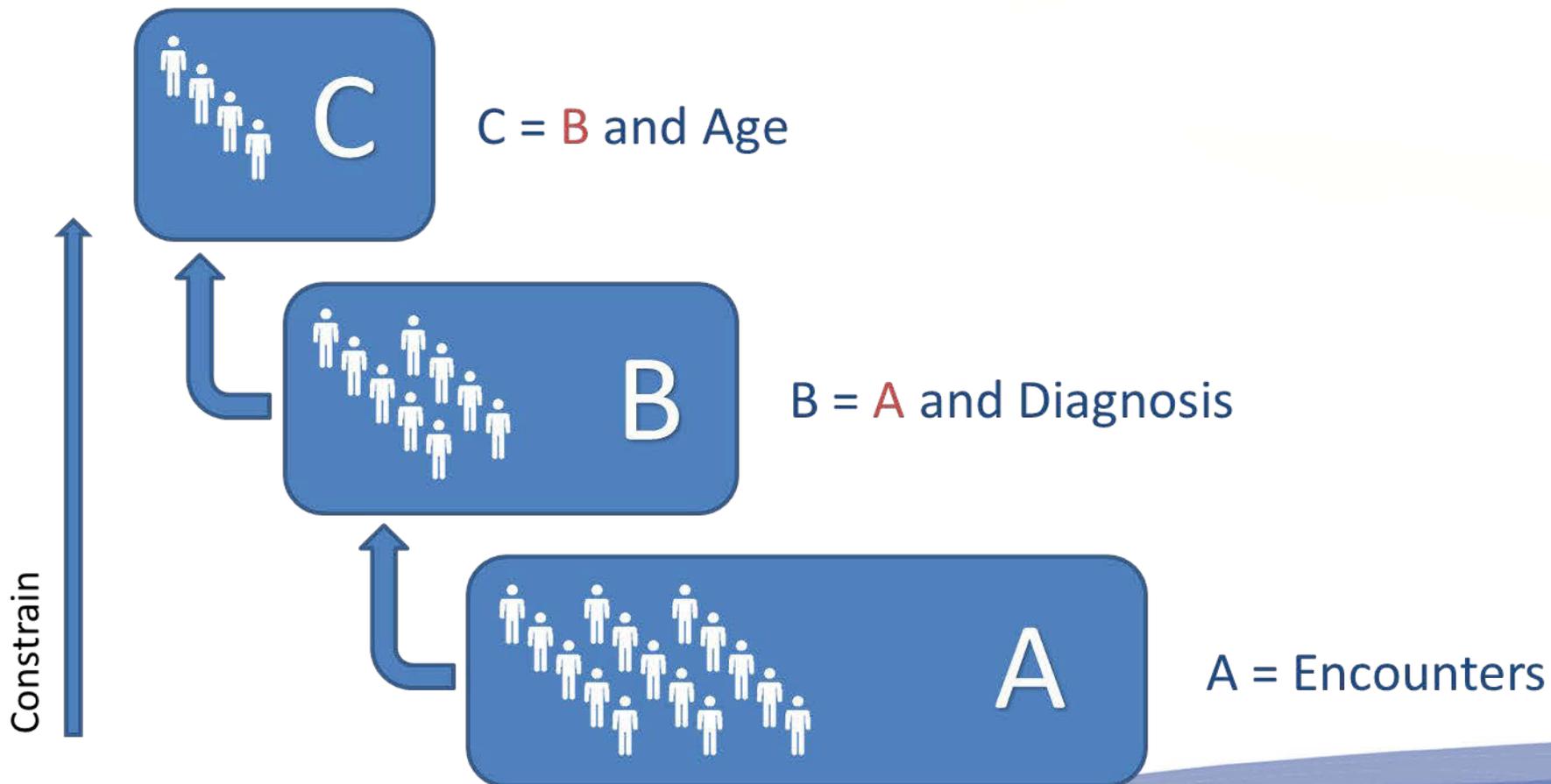
TJC."Ischemic Stroke Encounter" IschemicStrokeEncounter  
with "Antithrombotic Not Given at Discharge" NoDischargeAntithrombotic  
such that NoDischargeAntithrombotic.authorDatetime during IschemicStrokeEncounter.relevantPeriod

### ▲ Stratification

None

## Definitions

Initial Population = C



# Definitions – CMS 104

## ▲ TJC.Encounter with Principal Diagnosis and Age

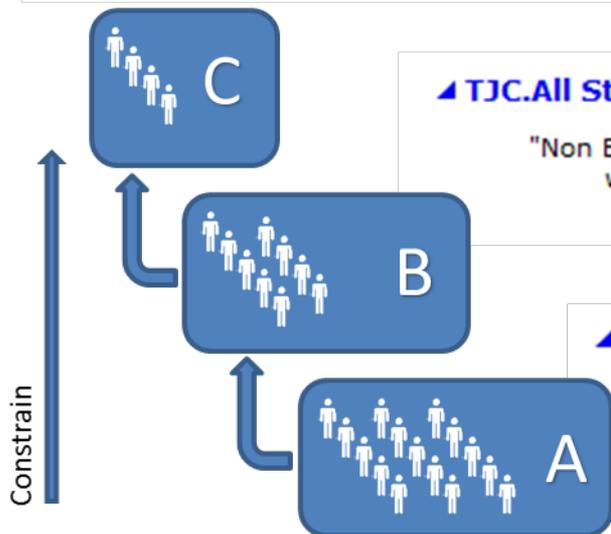
"All Stroke Encounter" AllStrokeEncounter  
 with ["Patient Characteristic Birthdate"] BirthDate  
 such that Global."CalendarAgeInYearsAt"(BirthDate.birthDatetime, start of AllStrokeEncounter.relevantPeriod)>= 18

## ▲ TJC.All Stroke Encounter

"Non Elective Inpatient Encounter" NonElectiveEncounter  
 where NonElectiveEncounter.principalDiagnosis in "Hemorrhagic Stroke"  
 or NonElectiveEncounter.principalDiagnosis in "Ischemic Stroke"

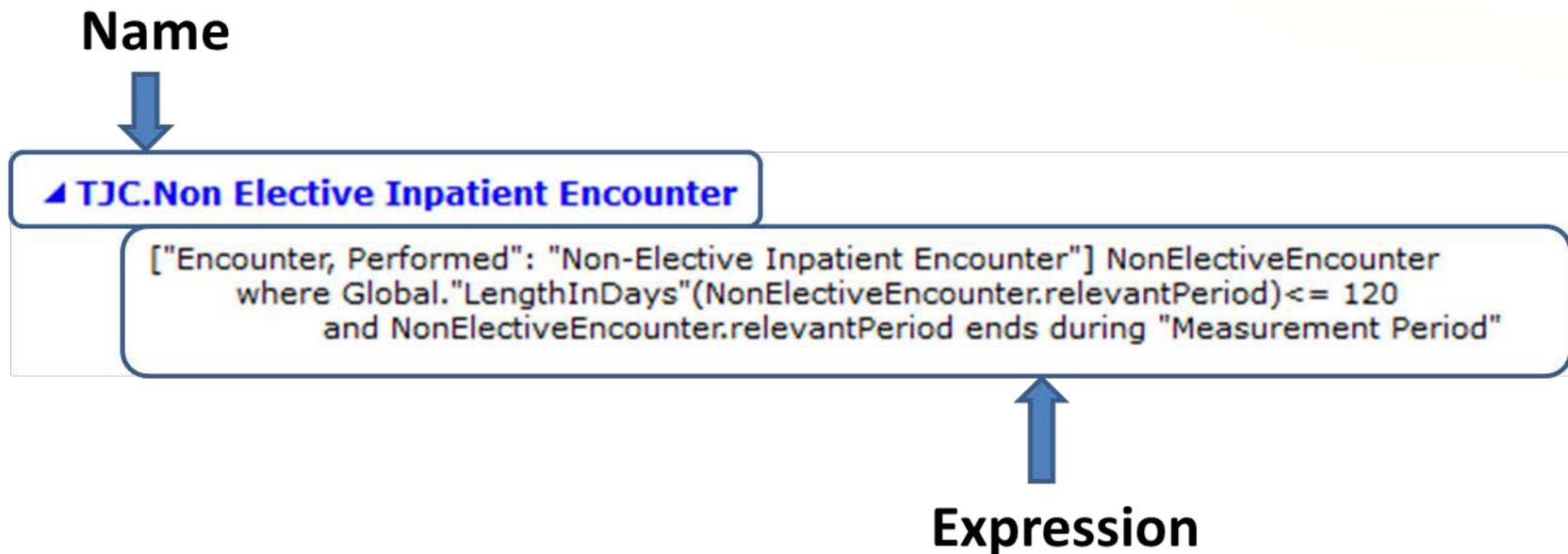
## ▲ TJC.Non Elective Inpatient Encounter

["Encounter, Performed": "Non-Elective Inpatient Encounter"] NonElectiveEncounter  
 where Global."LengthInDays"(NonElectiveEncounter.relevantPeriod)<= 120  
 and NonElectiveEncounter.relevantPeriod ends during "Measurement Period"



## Definitions – Anatomy

Definitions are made up of:



## Expressions

Identifier



Value



[ "Encounter, Performed" "Non-Elective Inpatient Encounter" ] NonElectiveEncounter  
where Global."LengthInDays"(NonElectiveEncounter.relevantPeriod) <= 120  
and NonElectiveEncounter.relevantPeriod ends during "Measurement Period"



Operator

## Queries

**Source**



**Alias**



```
["Encounter, Performed": "Non-Elective Inpatient Encounter"] NonElectiveEncounter  
where Global."LengthInDays"(NonElectiveEncounter.relevantPeriod) <= 120  
and NonElectiveEncounter.relevantPeriod ends during "Measurement Period"
```

## Retrieve (square brackets)

**Type**



**Value Set**



---

["Encounter, Performed": "Non-Elective Inpatient Encounter"]

## Terminology

### Terminology

- valueset "Antithrombotic Therapy" using "2.16.840.1.113883.3.117.1.7.1.201"
  - valueset "Comfort Measures" using "1.3.6.1.4.1.33895.1.3.0.45"
  - valueset "Discharge To Acute Care Facility" using "2.16.840.1.113883.3.117.1.7.1.87"
  - valueset "Discharged to Health Care Facility for Hospice Care" using "2.16.840.1.113883.3.117.1.7.1.207"
  - valueset "Discharged to Home for Hospice Care" using "2.16.840.1.113883.3.117.1.7.1.209"
  - valueset "Emergency Department Visit" using "2.16.840.1.113883.3.117.1.7.1.292"
  - valueset "Ethnicity" using "2.16.840.1.114222.4.11.837"
  - valueset "Hemorrhagic Stroke" using "2.16.840.1.113883.3.117.1.7.1.212"
  - valueset "Ischemic Stroke" using "2.16.840.1.113883.3.117.1.7.1.247"
  - valueset "Left Against Medical Advice" using "2.16.840.1.113883.3.117.1.7.1.308"
  - valueset "Medical Reason" using "2.16.840.1.113883.3.117.1.7.1.473"
  - valueset "Non-Elective Inpatient Encounter" using "2.16.840.1.113883.3.117.1.7.1.424"
  - valueset "ONC Administrative Sex" using "2.16.840.1.113762.1.4.1"
  - valueset "Patient Expired" using "2.16.840.1.113883.3.117.1.7.1.309"
  - valueset "Patient Refusal" using "2.16.840.1.113883.3.117.1.7.1.93"
  - valueset "Payer" using "2.16.840.1.114222.4.11.3591"
  - valueset "Race" using "2.16.840.1.114222.4.11.836"
- 
- Includes all terminologies referenced by the measure
  - This may include direct-reference codes, rather than only valuesets

# Value Set Authority Center (VSAC)

Welcome back,  tanglezero ▾



**Value Set Authority Center**  
U.S. National Library of Medicine

Welcome
Search Value Sets
Download
Q Browse Code Systems
i Help

Search the NLM Value Set Repository. Program: All ▾ Release: Latest ▾ Q Search

Refine by:

Steward ▾
Code System ▾

Query:  Clear

Search Results
API Resource  

Results for All : Latest : "2.16.840.1.113883.3.117.1.7.1.201" Export Search Results

Select a hyperlinked OID to see its value set details.

Matched Value Sets 

Download  View  Toggle  Clear Page 1 of 1  20 ▾ View 1 - 1 of 1

Name	Code System	Type	Steward	OID	Code Count 
<input type="checkbox"/>					
<input type="checkbox"/> Antithrombotic Therapy	RXNORM	Extensional	The Joint Commission	<a href="#">2.16.840.1.113883.3.117.1.7.1.201</a>	109

View  Download Page 1 of 1  20 ▾ View 1 - 1 of 1

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**Last updated:** Sep 14, 2018  
**First published:** October 25, 2012  
**Version:** 2.17.0

## Negation in QDM

**Negated Type**



**Terminology**



---

["Medication, Not Discharged": "Antithrombotic Therapy"] NoAntithromboticDischarge  
where NoAntithromboticDischarge.negationRationale in "Medical Reason"  
or NoAntithromboticDischarge.negationRationale in "Patient Refusal"

---



**Negation Rationale**

**Terminology**

# Value Set Downloads

## VSAC Downloadable Resources

This page contains groups of value sets designated for a particular program usage. You can search the entire repository of published VSAC value sets in the [Search Value Sets](#) tab.

**CMS eCQM Value Sets**

C-CDA Value Sets

CDCREC Roll-up codes

### Centers for Medicare & Medicaid (CMS) Electronic Clinical Quality Measure (eCQM) Value Sets

▼ 2019 Reporting/Performance Period eCQM Value Sets

▼ September 2018 Release eCQM Value Sets Publication Date: September 17, 2018

Expansion Version: eCQM Update 2018-09-17

Available Downloads	Sorted by CMS ID*	Sorted by Value Set Name*	Sorted by Quality Data Model Category*
eCQM Value Sets for Eligible Hospitals Published September 17, 2018	<b>Excel (xlsx)</b> SVS (xml)	Excel (xlsx) SVS (xml) SVS (text)	Excel (xlsx)
eCQM Value Sets for Eligible Professionals and Eligible Clinicians Published September 17, 2018	Excel (xlsx) SVS (xml)	Excel (xlsx) SVS (xml) SVS (text)	Excel (xlsx)
All eCQM Value Sets (Eligible Professionals, Clinicians and Hospitals) Published September 17, 2018	Excel (xlsx) SVS (xml)	Excel (xlsx) SVS (xml) SVS (text)	Excel (xlsx)

# Terminology and Attributes

["Medication, Not Discharged": "Antithrombotic Therapy"] NoAntithromboticDischarge where NoAntithromboticDischarge.negationRationale in "Medical Reason" or NoAntithromboticDischarge.negationRationale in "Patient Refusal"

	1	2	3	4	5
	CMS ID	NQF Number	Value Set Name	Value Set OID	QDM Category
1	CMS104v7		Medical Reason	2.16.840.1.113883.3.117.1.7.1.473	
306	CMS104v7		Medical Reason	2.16.840.1.113883.3.117.1.7.1.473	
307	CMS104v7		Medical Reason	2.16.840.1.113883.3.117.1.7.1.473	
308	CMS104v7		Medical Reason	2.16.840.1.113883.3.117.1.7.1.473	
309	CMS104v7		Medical Reason	2.16.840.1.113883.3.117.1.7.1.473	

## Direct-Reference Codes

### 1. Direct-reference code in a retrieve

["Assessment, Performed": "Risk for venous thromboembolism"]

#### Terminology

- codesystem "LOINC" using "2.16.840.1.113883.6.1 version 2.63"
- code "Risk for venous thromboembolism" using "LOINC version 2.63 Code (72136-5)"

#### Data Criteria (QDM Data Elements)

- "Assessment, Performed: Risk for venous thromboembolism" using "Risk for venous thromboembolism (LOINC version 2.63 Code 72136-5)"

### 2. Direct-reference code in a comparison

EDVisit.dischargeDisposition ~ "Patient deceased during stay (discharge status = dead) (finding)"

#### Terminology

- codesystem "SNOMEDCT" using "2.16.840.1.113883.6.96 version 2017-09"
- code "Patient deceased during stay (discharge status = dead) (finding)" using "SNOMEDCT version 2017-09 Code (371828006)"

# Direct-Reference Code Downloads

September 2018 Release eCQM Value Sets Publication Date: September 17, 2018

Expansion Version: eCQM Update 2018-09-17

Available Downloads	Sorted by CMS ID*	Sorted by Value Set Name*	Sorted by Quality Data Model Category*
eCQM Value Sets for Eligible Hospitals Published September 17, 2018	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a>	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a> <a href="#">SVS (text)</a>	<a href="#">Excel (xlsx)</a>
eCQM Value Sets for Eligible Professionals and Eligible Clinicians Published September 17, 2018	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a>	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a> <a href="#">SVS (text)</a>	<a href="#">Excel (xlsx)</a>
All eCQM Value Sets (Eligible Professionals, Clinicians and Hospitals) Published September 17, 2018	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a>	<a href="#">Excel (xlsx)</a> <a href="#">SVS (xml)</a> <a href="#">SVS (text)</a>	<a href="#">Excel (xlsx)</a>
Binding Parameter Specification for eCQM Value Sets Published September 17, 2018 ?	<a href="#">Excel (xlsx)</a>		
Retired/Legacy Codes Currently in eCQM Value Sets Published September 17, 2018 ?	<a href="#">Excel (xlsx)</a>		
Code System Versions Currently in eCQM Value Sets Published September 17, 2018 ?	<a href="#">Excel (xlsx)</a>		
Direct Reference Codes Specified within eCQM HQMF files, Publication Date: September 17, 2018 ?	<a href="#">Excel (xlsx)</a>		



# Direct Reference Code Contents

	1	2	3	4	5	6
	Code	Description	Code System	Code System Ord	eCQM type	eCQM Title
97	72136-5	Risk for venous thromboembolism	LOINC	2.16.840.1.113883.6.1	Eligible Hospitals	Venous Thromboembolism Prophylaxis
98	72136-5	Risk for venous thromboembolism	LOINC	2.16.840.1.113883.6.1	Eligible Hospitals	Intensive Care Unit Venous Thromboembolism Pro
99	72188-6	Clinical summary score [KCCQ]	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Functional Status Assessments for Congestive Hea
100	72189-4	Quality of life score [KCCQ]	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Functional Status Assessments for Congestive Hea
101	73831-0	Adolescent depression screening assessment	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Preventive Care and Screening: Screening for Depr
102	73832-8	Adult depression screening assessment	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Preventive Care and Screening: Screening for Depr
103	75622-1	HIV 1 and 2 tests - Meaningful Use set	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	HIV Screening
104	8462-4	Diastolic blood pressure	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Controlling High Blood Pressure
105	8462-4	Diastolic blood pressure	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Preventive Care and Screening: Screening for High
106	8480-6	Systolic blood pressure	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Controlling High Blood Pressure
107	8480-6	Systolic blood pressure	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Preventive Care and Screening: Screening for High
108	8480-6	Systolic blood pressure	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Hypertension: Improvement in Blood Pressure
109	8867-4	Heart rate	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Heart Failure (HF): Beta-Blocker Therapy for Left V
110	8867-4	Heart rate	LOINC	2.16.840.1.113883.6.1	Eligible Professionals/Eligib	Coronary Artery Disease (CAD): Beta-Blocker Ther
111	90680	Rotavirus vaccine, pentavalent (RV5), 3 dose schedule, live, fCPT		2.16.840.1.113883.6.12	Eligible Professionals/Eligib	Childhood Immunization Status

## Filtering with Where

**Function**



**Alias**



**Attribute**



---

where Global."LengthInDays"(NonElectiveEncounter.relevantPeriod)<= 120  
and NonElectiveEncounter.relevantPeriod ends during "Measurement Period"

---



**Intervals**

## Timing Relationships

### 1. Comparing two date/time values

```
Encounter.authorDatetime < assessment.authorDatetime
```

### 2. Comparing a date/time value with an interval (period)

```
assessment.authorDatetime during Encounter.relevantPeriod
```

### 3. Comparing an interval with a date/time value

```
Encounter.relevantPeriod includes assessment.authorDatetime
```

### 4. Comparing two intervals

```
Encounter.relevantPeriod during "Measurement Period"
```

## Intervals and Timing Phrases

### 1. Other interval operators

`DiagnosisElectiveDelivery.prevalencePeriod overlaps DeliveryEncounter.relevantPeriod`

### 2. Timing phrases using *starts* and *ends*

`PriorUterineDiagnosis.prevalencePeriod starts before start of DeliveryEncounter.relevantPeriod`

`HipKneeProcedure.relevantPeriod starts on or before end of QualifyingEncounter.relevantPeriod`

### 3. Timing phrases with offsets

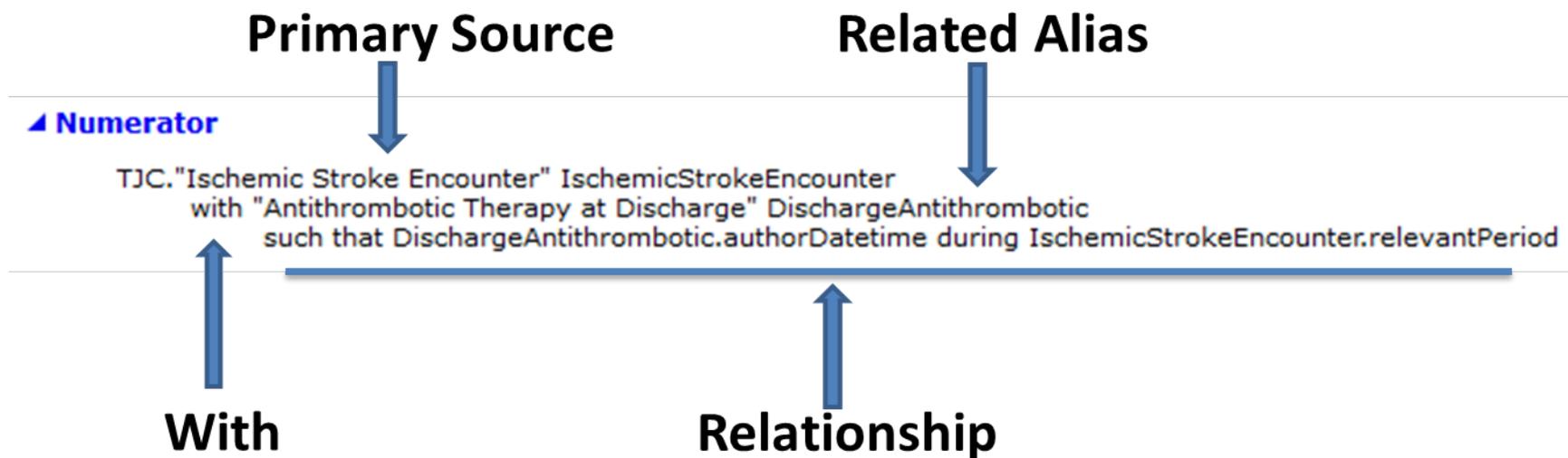
`Labor.authorDatetime 24 hours or less before start of CSection.relevantPeriod`

`EDAdmitOrder.relevantPeriod ends 1 hour or less before or on start of Encounter.relevantPeriod`

### 4. Timing phrases with precision

`AnesthesiaProcedure.relevantPeriod ends 1 day after day of start of QualifyingEncounter.relevantPeriod`

## Relationships



## Multiple Relationships

### ▲ Newborn Fed Breast Milk Only Since Birth

"Single Live Birth Encounter With Gestational Age 37 Weeks or More" QualifyingEncounter  
with ["Substance, Administered": "Breast Milk"] BreastMilkFeeding  
such that BreastMilkFeeding.relevantPeriod starts during QualifyingEncounter.relevantPeriod  
without ["Substance, Administered": "Dietary Intake Other than Breast Milk"] OtherFeeding  
such that OtherFeeding.relevantPeriod starts during QualifyingEncounter.relevantPeriod

With

Without

## Alternative Relationships

### Alternative 1



```
( "Encounter with Discharge Disposition to Home or Police Custody" DischargeToHomeEncounter
  with "Asthma Management Plan Completed" ActionPlan
  such that ActionPlan.authorDatetime during DischargeToHomeEncounter.relevantPeriod
)
union ( "Encounter with Discharge Disposition to Home or Police Custody" DischargeToHomeEncounter
  with "No Asthma Management Plan Due To Patient Refusal" NoActionPlan
  such that NoActionPlan.authorDatetime during DischargeToHomeEncounter.relevantPeriod
)
```

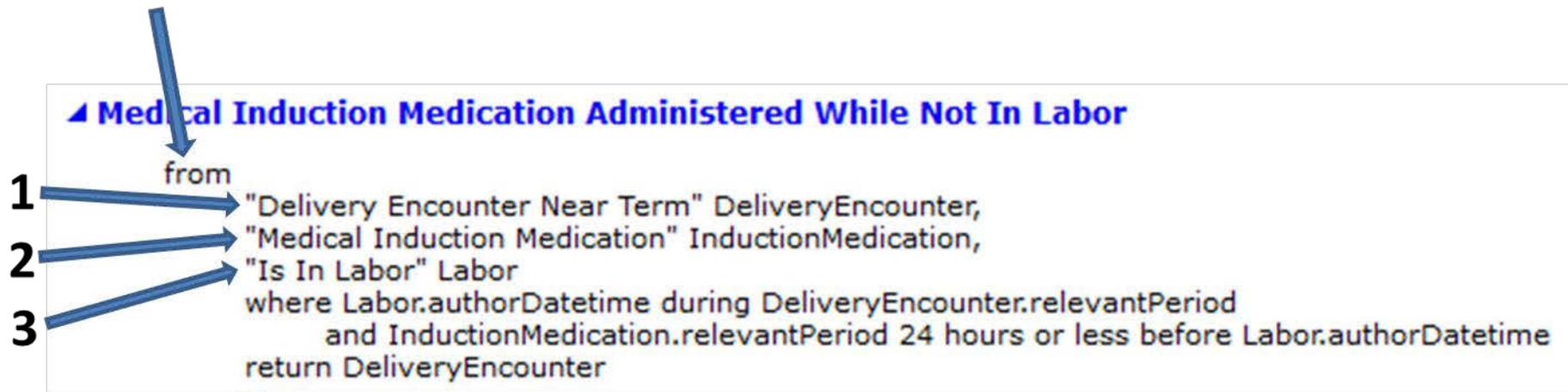
Union



Alternative 2

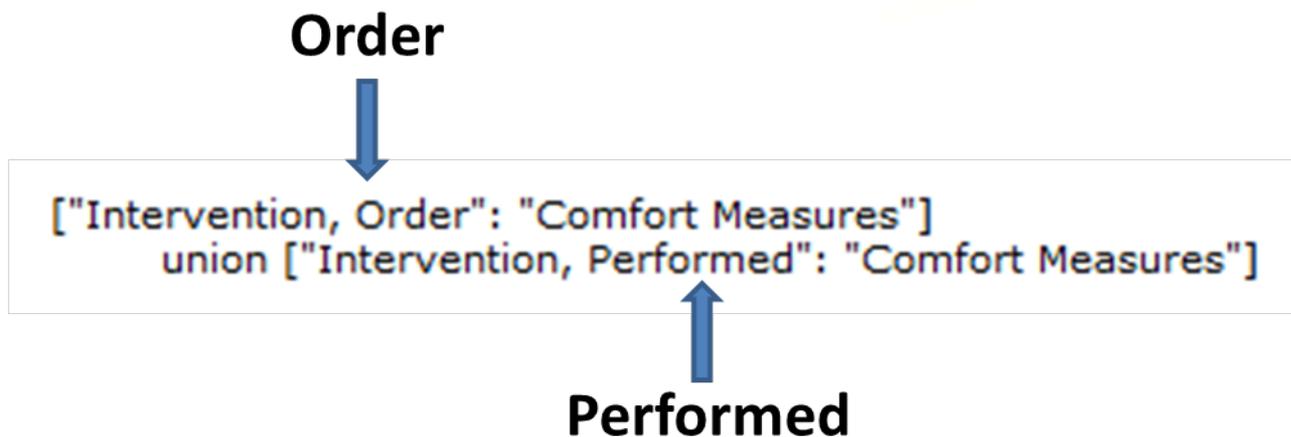
## Multiple Sources

From



Return

## Combining Lists



Coalesce – Return the first present value in a list of expressions

```
Coalesce(start of ComfortMeasures.relevantPeriod, ComfortMeasures.authorDatetime)
```

## Using Return to Shape Results

**Assessment, Performed**

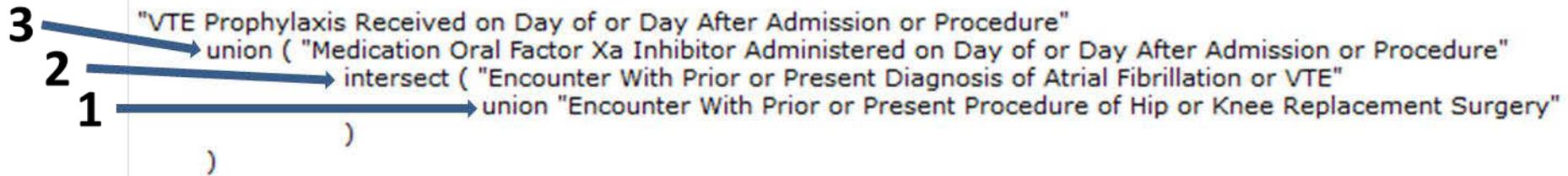


```
( ["Assessment, Performed": "Risk for venous thromboembolism"] VTERiskAssessment
  where VTERiskAssessment.result in "Low Risk"
)
union ( ["Laboratory Test, Performed": "INR"] INRLabTest
  where INRLabTest.result > 3.0
  return "Assessment, Performed" { id: INRLabTest.id, authorDatetime: INRLabTest.resultDatetime }
)
```



**Constructed Assessment, Performed**

## Intersect and Except



## Local Definitions Using Let

### Local Definition

```
"Initial Population" QualifyingEncounter
let FirstPCI: First("PCI Procedure" FirstPCI
    where FirstPCI.relevantPeriod starts on or after Global."Hospital Arrival Time"(QualifyingEncounter)
    sort by start of relevantPeriod
)
with "Diagnostic Electrocardiogram" ECG
    such that ECG.relevantPeriod starts during Global."Hospitalization"(QualifyingEncounter)
    or ECG.relevantPeriod starts 1 hour or less on or before Global."Hospital Arrival Time"(QualifyingEncounter)
where FirstPCI.relevantPeriod starts 1440 minutes or less on or after Global."Hospital Arrival Time"(QualifyingEncounter)
and not exists ( "Fibrinolytic" FibrinolyticTherapy
    where FibrinolyticTherapy.relevantPeriod starts after Global."Hospital Arrival Time"(QualifyingEncounter)
    and FibrinolyticTherapy.relevantPeriod starts before start of FirstPCI.relevantPeriod
)
```

## Available Tools and Resources

- » CQL Specification - CQL Release 1, Standard for Trial Use (STU) 2
  - [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=400](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=400)
  - <http://cql.hl7.org/STU2/index.html>
- » CQL-Based HQMF IG – Release 1, STU 2.1
  - [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=405](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>
- » Value Set Authority Center (VSAC)
  - <https://vsac.nlm.nih.gov/>



## Available Tools and Resources (Cont'd)

- » CQL Formatting and Usage Wiki
  - <https://github.com/esacinc/CQL-Formatting-and-Usage-Wiki/wiki>
- » CQL GitHub Tools Repository
  - [https://github.com/cqframework/clinical\\_quality\\_language](https://github.com/cqframework/clinical_quality_language)
- » Measure Authoring Tool
  - <https://www.emasuretool.cms.gov/>
- » Bonnie Testing Tool
  - <https://bonnie.healthit.gov/>
- » To submit an issues ticket for CQL, please visit the ONC JIRA site
  - <https://oncprojecttracking.healthit.gov/support/projects/CQLIT>

**Questions?**

## Slides and all Q&As will be posted to:

- eCQI Resource Center - <https://ecqi.healthit.gov>
- The Joint Commission Pioneers in Quality website - [https://www.jointcommission.org/piq\\_expert\\_to\\_expert\\_series/](https://www.jointcommission.org/piq_expert_to_expert_series/)
- Additional Questions may be submitted to: **Electronic Clinical Quality Measure (eCQM) Issue Tracker in JIRA:**  
<https://oncprojecttracking.healthit.gov/support/projects/CQM/summary>



# “Pioneers in Quality™ eCQM Clinical Quality Language (CQL) Basics for Hospitals”

**Thank you!**

The next PIQ Webinar on STK-2, STK-3, and STK-6 will be held December 11th from 12:00 – 1:00PM EST.



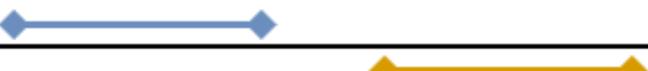
# “Pioneers in Quality™ eCQM Clinical Quality Language (CQL) Basics for Hospitals”

## Appendix



Key	 1 <sup>st</sup> interval (X)
	 2 <sup>nd</sup> interval (Y)

# Comparing Intervals

before	
meets before	
overlaps before	
includes	
starts	
same as (=)	
ends	
included in (during)	
overlaps after	
meets after	
after	

Key ■ 1<sup>st</sup> interval (X)  
■ 2<sup>nd</sup> interval (Y)

## Timing Phrases

CQL also supports timing phrases that make it easier to express precise relationships between intervals using natural language.

The *before* and *after* operators can have a prefix of *starts* or *ends*, and a suffix of *start* or *end*. For example,

IntervalX starts before start IntervalY

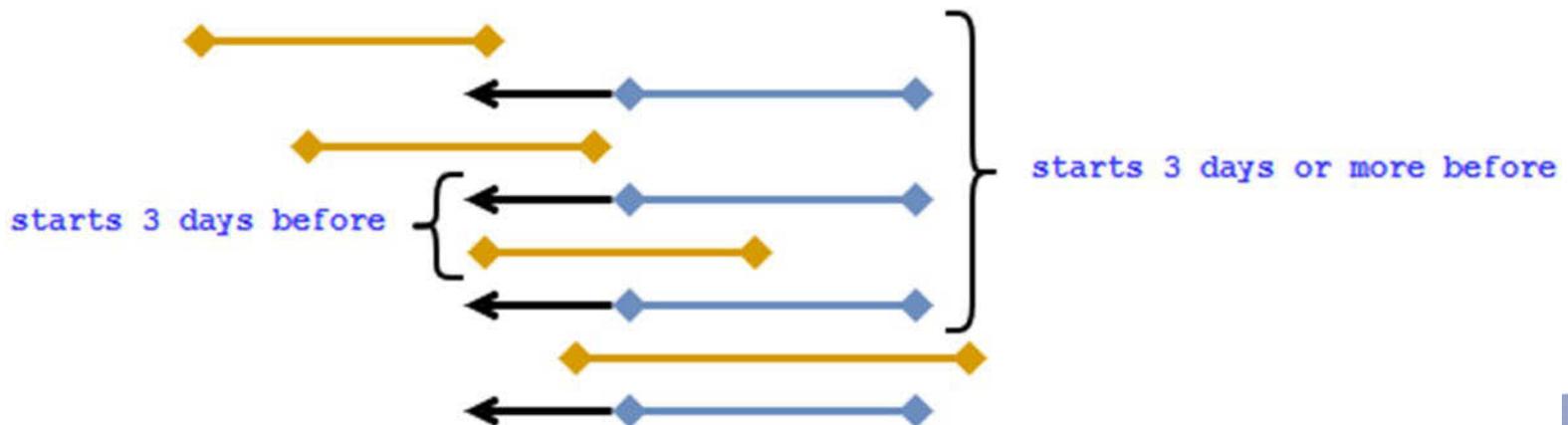


## Timing Phrases (cont.)

The *before* and *after* operators can also take an offset that indicates how far away a given relationship should be.

This offset can be absolute, indicating that the boundary of the interval must be on the offset, or it can be relative, indicating that the boundary must be at least on the offset.

IntervalX starts 3 days before start IntervalY  
 IntervalX starts 3 days or more before start IntervalY



Key	<span style="color: yellow;">■</span> 1 <sup>st</sup> interval (X)
	<span style="color: blue;">■</span> 2 <sup>nd</sup> interval (Y)

# Timing Phrases (cont.)

You can also specify a range for the boundary relationship using the *within..of* operator.

```
IntervalX starts within 3 days of start IntervalY
```

