Measures 101: A Deep Dive

CHCANYS Clinical Committee

April 1st, 2016
Introductions

Eric Gunther

• Engineering team lead
• With company since 2011
• Built measure calculation infrastructure
• Oversee development of new measures and features in CPCI

Samuel Bar

• Implementation Specialist at Azara since 2014
• Managed new implementations and remapping projects at 12 CHCANYS centers
• Mapped data elements for UDS, MU, HEDIS, eHIVQUAL, and P4C
• Familiar with data entry workflows in NextGen, eClinical Works, GE Centricity, Allscripts, and Epic
Start with a Question

How are we doing when it comes to depression screening and follow-up for patients who screened positive?

- Need to be more specific.
- Ambiguity is one of the main reasons a measure doesn’t meet your expectations or doesn’t match across systems.
- Be on the lookout for ambiguity!
Choose a Spec

- **Meaningful Use eCQMs**
  - Published by CMS once a year
  - Extremely specific but high learning curve
  - What we’re going to be looking at today

- **UDS**
  - Published by HRSA once a year
  - FQHC’s know it well
  - Fairly accessible specification

- **HEDIS**
  - Published by NCQA once a year
  - Requires a license
  - Historically made for claims data
Meaningful Use eCQM Spec

Population criteria
- Initial Patient Population
  - AND: "Patient Characteristic: Birthdate: birth date" <= 12 year(s) starts before start of "Measurement Period"
  - AND: "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
- Denominator =
  - AND:
    - OR:
      - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Occurrence A of Diagnosis: Active: Depression diagnosis" starts before start of "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)"
    - OR:
      - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Occurrence A of Diagnosis: Active: Depression diagnosis" starts before start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)"
    - OR:
      - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Occurrence A of Diagnosis: Active: Bipolar Disorder" starts before start of "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)"
      - AND: "Occurrence A of Diagnosis: Active: Bipolar Disorder" starts before start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)"
    - OR:
      - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Occurrence A of Diagnosis: Active: Bipolar Disorder" starts before start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)"
      - AND: "Occurrence A of Diagnosis: Active: Bipolar Disorder" starts before start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)"
- Numerator =
  - AND:
    - OR:
      - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
      - AND: "Patient Characteristic: Birthdate: birth date" <= 16 year(s) starts before start of "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)"
      - AND: "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Negative Depression Screening)" during "Measurement Period"
    - OR:
    - AND: "Intervention: Performed: Additional evaluation for depression - adolescent"
    - OR: "Intervention: Order: Referral for Depression Adolescent"
    - OR: "Medication, Order: Depression medications - adolescent"
    - OR: "Intervention: Performed: Follow-up for depression - adolescent"
    - OR: "Procedure, Performed: Suicide Risk Assessment"
    - <= 1 day(s) starts after start of "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Positive Depression Screening)"
  - OR:
    - AND: "Most Recent: Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)" during "Measurement Period"
    - AND: "Patient Characteristic: Birthdate: birth date" <= 18 year(s) starts before start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)"
    - AND: "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Negative Depression Screening)" during "Measurement Period"
    - OR:
    - AND: "Intervention: Performed: Additional evaluation for depression - adult"
    - OR: "Intervention: Order: Referral for Depression Adult"
    - OR: "Medication, Order: Depression medications - adult"
    - OR: "Intervention: Performed: Follow-up for depression - adult"
    - OR: "Procedure, Performed: Suicide Risk Assessment"
    - <= 2 day(s) starts after start of "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Positive Depression Screening)"

Denominator Exceptions =
- AND:
  - OR: "Risk Category Assessment not done: Medical reason contraindicated for "Adolescent Depression Screening LOINC Value Set"
  - OR: "Risk Category Assessment not done: Medical reason contraindicated for "Adult Depression Screening LOINC Value Set"
  - OR: "Risk Category Assessment not done: Patient reason refused for "Adolescent Depression Screening LOINC Value Set"
  - OR: "Risk Category Assessment not done: Patient reason refused for "Adult Depression Screening LOINC Value Set"
  - OR: "Occurrence A of Risk Category Assessment not done: Medical reason contraindicated for "Adolescent Depression Screening LOINC Value Set"
  - OR: "Occurrence A of Risk Category Assessment not done: Medical reason contraindicated for "Adult Depression Screening LOINC Value Set"
  - OR: "Occurrence A of Risk Category Assessment not done: Patient reason refused for "Adolescent Depression Screening LOINC Value Set"
  - OR: "Occurrence A of Risk Category Assessment not done: Patient reason refused for "Adult Depression Screening LOINC Value Set"
  - OR: "Occurrence A of Risk Category Assessment: Adolescent Depression Screening (result: Depression Screening Result)" during "Measurement Period"
  - OR: "Occurrence A of Risk Category Assessment: Adult Depression Screening (result: Depression Screening Result)" during "Measurement Period"

Data criteria (ODM Data Elements)
- "Diagnosis, Active: Bipolar Disorder" using "Bipolar Disorder Grouping Value Set (1.16.640.1.113833.3.500.450)"
- "Diagnosis, Active: Depression diagnosis" using "Depression diagnosis Grouping Value Set (2.16.640.1.113833.3.600.145)"
- "Encounter, Performed: Depression Screening Denominator Encounter Codes New using "Depression Screening Denominator Encounter Codes New Value Set (2.16.640.1.113833.3.600.1916)"
- "Intervention, Performed: Additional evaluation for depression - adolescent using "Additional evaluation for depression - adolescent LOINC Value Set (2.16.640.1.113833.3.600.531)"
  "Intervention, Performed: Follow-up for depression - adolescent using "Follow-up for depression - adolescent LOINC Value Set (2.16.640.1.113833.3.600.1542)"
Anatomy of a Measure

• Measure logic
  – The ANDs and ORs

• Value sets
  – Defining data elements
  – Lists of codes

• Attribution
  – Running a measure by provider or location
  – Running a measure for a month or quarter
  – Putting patients into buckets
Measure Logic – Calculating the Result

Measure result = \frac{\text{Numerator}}{\text{Denominator} - \text{Exclusions}}

TY March 2015 to TY March 2016 Trend

Result: 52%
Numerator: 313,851
Denominator: 731,349
Exclusions: 124,030
Measure Logic – Denominator Population

Start with the denominator

Patients who had ...

• A qualifying visit in the past year
  – AND

• Over 12 years old
  – Ambiguous!
  – How about “age at beginning of reporting period >= 12 years”
Measure Logic – Numerator Population

Patients in the denominator who had...

• A negative result in their *most recent* depression screen
  – OR
• A positive result in their most recent depression screen
  **AND** follow-up documented

• Ambiguous!
  – What counts as a positive depression screen?
  – What counts as follow-up?
  – When does the follow-up have to be documented?
Measure Logic – Numerator Population Clarified

• What is a positive depression screen?
  – PHQ-2 >= 3
  – PHQ-9 >= 10
  – Other standardized depression screen marked as positive

• What is follow-up?
  – Depression medications
  – Additional evaluation for depression
  – Referral for depression
  – Can be custom mapped for your health center

• When does follow-up have to be documented?
  – MU – within a day
  – UDS – before the end of the year
Measure Logic – Exclusions Population

Patients in the denominator who had...

• Active depression OR bipolar diagnosis

See any problems with this?

Excluding people who got screened, had follow-up, and were subsequently diagnosed. Those were all numerator patients!
Measure Logic – Exclusions Population Fixed

Patients in the denominator who had...

• Active depression or bipolar diagnosis **AND** (no screen during reporting period **OR** the diagnosis was made before the screen)
Measure Logic – “Exclusion” Confusion

Patients not in the denominator population (UDS)

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>100</td>
<td>75%</td>
</tr>
</tbody>
</table>

\[
\frac{75}{100} = 75%
\]

Patients reported in the exclusions population (MU)

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
<th>Exclusions</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>120</td>
<td>20</td>
<td>75%</td>
</tr>
</tbody>
</table>

\[
\frac{75}{(120-20)} = 75%
\]
Value Sets

• Lists of codes defining the data elements

• Code systems
  – CPT – procedures, office visits
  – ICD-9/10 – diagnoses
  – RxNorm – medications
  – Custom mappings
    • Takes a lot of effort compared to codified data

• Try to use standardized value sets

• Value set feedback process
  – Submit tickets through ONC’s JIRA to question value set content
  – Medications example – should Abilify be in the value set?
Value Sets - Example

Depression medication value set from VSAC (Value Set Authority Center)
Data Elements are the Building Blocks of Measures

- **Screening care counselling procedure**
- **Diagnosis or Assessment**
- **Name, MRN, Gender, DOB**
- **Qualifying Encounters**

NUMERATOR

DENOMINATOR
Depression Screening Data Elements

**NUMERATOR**

- PHQ-2 / PHQ-9 & Follow-Up

**DENOMINATOR**

- Not Depressed or Bipolar
- Name, DOB
- Qualifying Encounters

- Did the patient get a PHQ-2/PHQ-9 and have a Depression Follow-up if needed?
- Did the patient have a encounter qualifying them for the measure?

Who is the patient and do they meet age criteria?
Depression Screening and Follow-Up

START

Patient Arrives

Front Desk Checks in Patient

MA/LPN Rooms Patient and does vital signs.

MA/LPN records patient answers in EHR. PHQ-2 Score Calculates.

If score is <3 then patient does not need follow-up.

No Follow-Up

Follow-Up Needed

If score is >=3 then patient needs PHQ-9

No Follow-Up

Follow-Up Needed

MA/LPN continues depression screening to complete PHQ-9

If score is >=10, provider refers patient to behavioral health

Denominator Criteria

Numerator Criteria

Previous Visit

PHQ-9 score >=10

Patient sees BH specialist

BH diagnoses patient with Depression, adds F33.* or F32.* to problem list

Exclusion Criteria

Depression Screen Complete

Continue with visit.

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Missing data elements are like holes in a foundation.

PHQ-2 done by patient on paper, never in EHR

Free text Comments: Patient is depressed

Patient is billed with custom CPT codes
Common Mapping Issues

Denominator

- Use of custom CPT codes, addition of modifiers

Numerator

- Depression screening done outside EHR
- Unstructured PHQ-2 & PHQ-9 results
- No clear follow-up workflow
- Medications dispensed without structured data

Exclusions

- Behavioral Health does not use EHR
- Depression diagnosis not entered using correct ICD9/ICD10/SNOMED
CPCI Architectural Overview

- PCA and PCMH focused solution
- Data from disparate EHR and EPM systems
- Daily data refresh
- Data unified in EHR-agnostic Data Warehouse for apples to apples comparison
- Web-based reporting platform accessible from any major browser
- User role differentiation and data blinding
- Graphical and text based depictions of datasets
- External data links geographic characteristics to patients & providers
CPCI Data Processing

• Loading (ETL)
  – Nightly
  – Normalization and “scrubbing”

• Measure calculation
  – Weekly
  – All patients, all measures, “current” periods
  – Historical processing upon request

• Attribution
  – Run-time (when you use a report)
  – Aggregate measure results
Attribution

- “Slicing and dicing” the measures
- Measures are calculated per patient, attribution is how we sum up the measure results by placing patients into buckets
Attribution - Provider

• Sum up patient results into provider buckets
  – Rendering provider – patient had to have a visit with the provider
    • Patients can contribute to multiple buckets, you can’t add up all the buckets to get your center’s total
  – Usual provider – patient must be in the provider’s panel
Attribution - Period

• Most measure specs assume a year long period, so how can we run them for smaller periods like month or quarter?

• Running a measure for “March 2016”
  – Uses Trailing Year (TY) March 2016 measure results
  – Only return patients who had a visit in March 2016

• Why not just calculate measure for smaller period?
  – Don’t want to change compliance standard. Requiring depression screen in the past month, as opposed to past year, would bring down the numerator.
  – The drilldown becomes meaningless!
Attribution – Choosing a Period

• Trailing Year / Calendar Year
  – Most compliance reporting is trailing year
  – If we had to report this month, what is our result?

• Month/Quarter
  – Better for tracking progression and monitoring PDSA cycle
  – How did we do this month?
Additional Resources

- **CMS eCQM Library**

- **UDS 2015 manual**

- **Value Set Authority Center (VSAC)**
  - Requires free UMLS license

- **USHIK (great display of measure logic & value sets)**

- **eCQI Resource Center**
  - [https://ecqi.healthit.gov/](https://ecqi.healthit.gov/)

- **eCQM Issue Tracking**
  - [https://jira.oncprojecttracking.org](https://jira.oncprojecttracking.org)
Questions