June 2020 CDS Connect Work Group Call
<table>
<thead>
<tr>
<th>Schedule</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 – 3:02</td>
<td>• Roll Call, Michelle Lenox (MITRE)</td>
</tr>
<tr>
<td>3:02 – 3:05</td>
<td>• Review of the Agenda, Maria Michaels (CDC)</td>
</tr>
<tr>
<td>3:05 – 3:15</td>
<td>• Lessons Learned with CDS Connect: Use of Authoring Tool for Hypertension, Christopher d’Autremont (OSHU)</td>
</tr>
<tr>
<td>3:15 – 3:50</td>
<td>• CPG on FHIR updates to Repository and CDS Authoring Tool (MITRE)</td>
</tr>
<tr>
<td>3:50 – 3:55</td>
<td>• What's New with CDS Connect This Month (MITRE)</td>
</tr>
<tr>
<td>3:55 – 4:00</td>
<td>• Open Discussion, Announcements, and Close Out, Maria Michaels (CDC)</td>
</tr>
</tbody>
</table>
Objectives

• Hear lessons learned from a member developing CDS Artifacts using the CDS Authoring Tool
• View demonstrations on implementation of CPG-on-FHIR with CDS Connect’s Repository and CDS Authoring Tool
• Share new features and resources available for CDS Connect
Developing CDS Artifacts for Hypertension

Oregon Health & Science University
Care Management Plus Team

Presenters:

Christopher d’Autremont, MBI
Senior Research Assistant

Matthew Storer
Developer
About our project

• Developed by the Care Management Plus Team under Dr. David Dorr at OHSU

• Hypertension is a common condition that predicts heart attack and stroke

• Treatment requires a combination of lifestyle changes and pharmaceutical interventions

• Our goal is to develop and test a patient-facing, EHR-agnostic CDS tool for Hypertension treatment using FHIR resources
Prototype Hypertension FHIR App

- Displays over-time BP chart detailing raw data points, regression, and trend via custom curve for systolic and diastolic blood pressure observations;

- Includes a tabbed pane displaying textual summary and detailed data;

- Integrates with CQF-Ruler for CQL execution of recommendation logic via PlanDefinition artifacts
Hypertension CDS Development – cont.2

- **Condition**: No comorbidity requiring specific initial pharmacotherapy
  - **Value Set 1**: Diabetes (2.16.840.1.113883.3.464.1003.103.12.1001)
  - **Value Set 2**: Myocardial Infarction (2.16.840.1.113883.3.464.1003.103.12.1001)
  - **Value Set 3**: Chronic Kidney Disease All Stages (1 through 5) (2.16.840.1.113762.1.1222159)
  - **Value Set 4**: Coronary Artery Disease No MI (2.16.840.1.113883.3.464.1003.103.12.1001)
  - **Value Set 5**: Heart Failure (2.16.840.1.113883.3.464.1003.103.12.1001)

- **Expressions**:
  - Exists
  - Not

- **Return Type**: Boolean

- **Code Snippet**:

```plaintext
define "No comorbidity requiring specific initial pharmacotherapy":
   not(exists("generic_condition_valuesets"))

define "Comorbid Diabetes":
   exists([Condition: "Diabetes V5"])

define "Comorbid Chronic Kidney Disease All Stages (1 through 5)":
   exists([Condition: "Chronic Kidney Disease All Stages (1 through 5) V5"])

define "Coronary Artery Disease No MI":
   exists([Condition: "Coronary Artery Disease No MI V5"])

define "No prior Myocardial Infarction":
   not(exists([Condition: "Myocardial Infarction V5"]))

define "History of Myocardial Infarction":
   exists([Condition: "Myocardial Infarction V5"])

define "Recent Myocardial Infarction":
   exists(CSP.ConditionLookback([Condition: "Myocardial Infarction V5"], 2 years))

define "Comorbid HF":
   exists([Condition: "Heart Failure V5"])

define "Recommendation":
   if "Adults over 55 with no comorbidity requiring specific initial pharmacotherapy" then "As the patient does not have a comorbidity requiring specific initial pharmacotherapy, consider using a Thiazide type diuretic, an ACE Inhibitor, an ARB, or a CCB as therapeutic options. Do not use a Beta-blocker as a therapeutic option."
The CDS Authoring Tool provides expressions that can be applied to different element types.

However, many expressions applicable to certain element types are not available through the CDS Authoring Tool.

This requires pushing any logic that employs unsupported expressions to External CQL Libraries, limiting the Tool’s usefulness.

More commonly-used expressions should be added to the Tool.

First(), Last(), Take(), Contains(), Avg(), Min(), Max(), Median(), Mode(), StdDev()
An External CQL Library cannot be uploaded if a Library with that name already exists.

Also, an External CQL Library cannot be deleted if it is referenced by any components in the CDS Authoring Tool.

As such, fixing bugs or adding logic to External CQL Libraries requires repetitive and burdensome recreation of Authoring Tool artifacts.

Updating Libraries should be easier.
Questions?
CPG-ON-FHIR UPDATES: CDS CONNECT REPOSITORY

MITRE, CDS Connect Team
CPG-ON-FHIR UPDATES:
CDS AUTHORING TOOL

MITRE, CDS Connect Team
Questions?
WHAT’S NEW WITH CDS CONNECT

MITRE, CDS Connect Project Team
Updates and New Features

- **Authoring Tool**
  - Support for providing user comments on groups
  - Support for using and exporting URL-based value set identifiers (CPG-on-FHIR recommendation)
  - Usability enhancements and bug fixes
  - Continued work on CPG-on-FHIR metadata support (not yet released)

- **Prototype Tools**
  - **CQL Testing Framework**
    - Version 2.1.1: Support for downloading and using version-specific value sets from VSAC
  - **CQL Services**
    - Version 1.6.1: Support for downloading and using version-specific value sets from VSAC
  - **Pain Management Summary**
    - Version 0.3.3: Support for downloading and using version-specific value sets from VSAC; support for URL-based value set identifiers; bug fix for incorrect Windows file paths

- **Repository**
  - CPG-on-FHIR implementation for repository under development (not yet released)
  - Improvements to login/logout and profile pages currently under development
  - Updated to Drupal 8.8 (no user interface changes)

Link to CDS Connect: https://cds.ahrq.gov/cdsconnect
ANNOUNCEMENTS, OPEN DISCUSSION AND CLOSE-OUT

Maria Michaels
Office of Public Health Scientific Services
Centers for Disease Control and Prevention