

HimSS[®] 18

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Las Vegas | Venetian – Palazzo – Sands Expo Center

A National Repository of Widely-Shareable, Computable Clinical Decision Support

Session 199, March 8, 2018

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ENGAGED

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Conflict of Interest

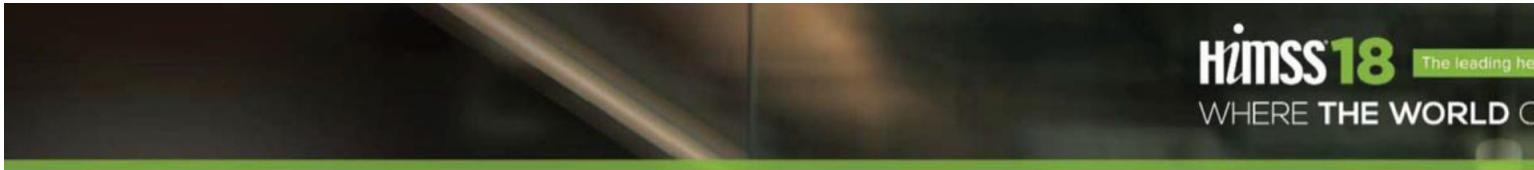
Edwin Lomotan, MD

Rob McCready

Has no real or apparent conflicts of interest to report.

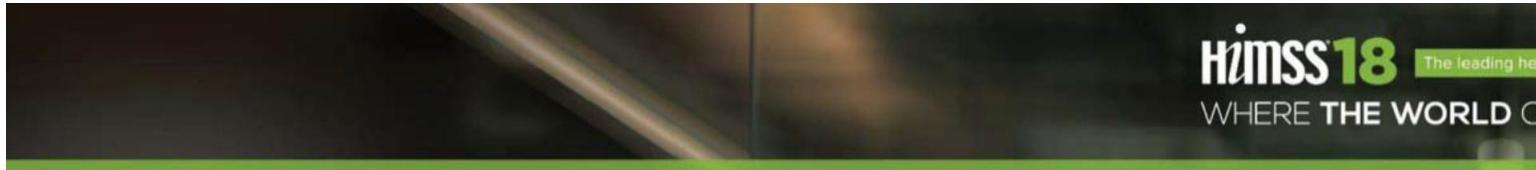
Agenda

- Overview of AHRQ's Clinical Decision Support efforts
- Clinical Decision Support Primer
- ConOps for AHRQ CDS Connect environment
- HL7 Clinical Quality Language Standard
- CDS Development Processes and Governance
- Public Work Group
- Future Evolution of CDS: "*CDS as a Service*"



Learning Objectives

- Evaluate pros and cons of shareable CDS that can be held and maintained in a common repository
- Recognize how to transform clinical guideline statements into precise, computable CDS
- Explain key considerations in authoring, searching, and accessing publicly-available CDS
- Apply CDS from a standard source for use in your own Health IT environment
- Discriminate among similar, but conflicting, guidance when choosing CDS for your own organization



AHRQ Clinical Decision Support

- Agency for Healthcare Research and Quality (AHRQ) has a long history of investment in CDS
- 2016 initiative based on patient-centered outcomes research and ACA legislative requirements (Sec 6301)
 - *(b) INCORPORATION OF RESEARCH FINDINGS.—The Office [AHRQ/OCKT], in consultation with relevant medical and clinical associations, shall assist users of health information technology focused on clinical decision support to promote the timely incorporation of research findings disseminated under subsection (a) into clinical practices and to promote the ease of use of such incorporation.*
 - *(c) FEEDBACK - The Office shall establish a process to receive feedback from physicians, health care providers, patients, and vendors of health information technology focused on clinical decision support, appropriate professional associations, and Federal and private health plans about the value of the information disseminated and the assistance provided under this section.*



Current AHRQ CDS Initiative

<http://cds.ahrq.gov>

Advancing evidence into practice through CDS and making CDS more shareable, standards-based, and publicly-available

Four components:

1. Engaging a stakeholder community
2. Creating prototype infrastructure for sharing CDS and developing CDS
3. Advancing CDS through demonstration and dissemination research
4. Evaluating the overall initiative



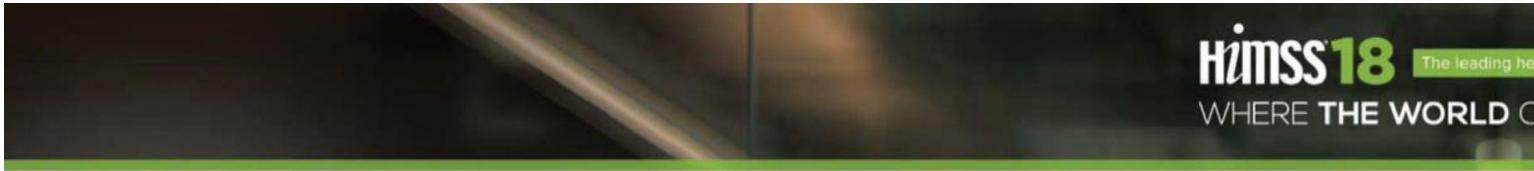


Mission: Demonstrate a system that supports

- New evidence-based standards of care
- Codifies Clinical Decision Support (CDS) artifacts based on those standards using an interoperable, international data standard
- Shares the resulting CDS capabilities via an accessible, web-based tool

What is Clinical Decision Support (CDS)?

- Process for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve **healthcare outcomes** and **healthcare delivery**

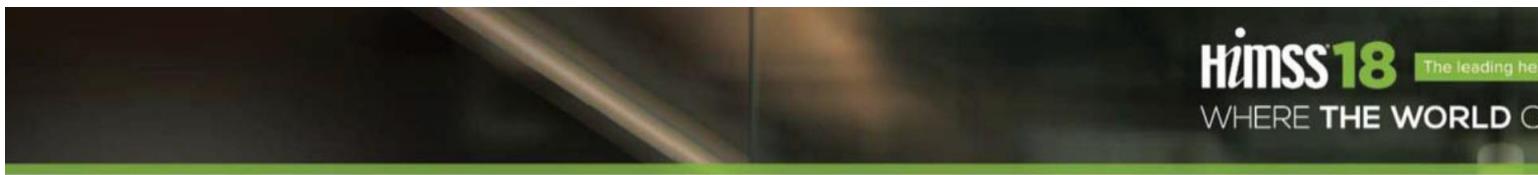


The CDS Five “Rights” Framework

Clinical decision support delivers:

1. The right information
2. To the right person
3. In the right format
4. Through the right channel
5. At the right time

Reference: Osheroff J.A., Pifer E.A. Teich J.M. et. al. *Improving Outcomes with Clinical Decision Support: An Implementer’s Guide*, 2 Ed. Danvers, MA: HIMSS Publishing, Taylor & Francis Group/CRC Press, 2012.



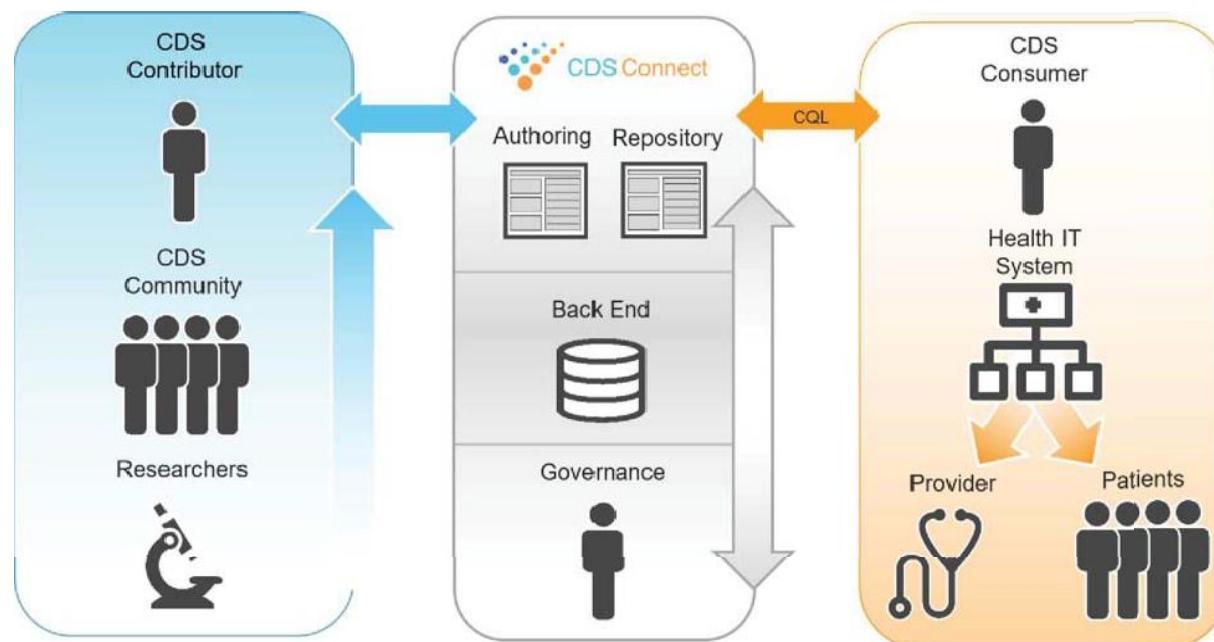
Activities:

1. **Repository:** Design and build an online software “repository” for hosting and sharing new CDS artifacts
2. **Authoring:** Build a public facing, web-based CDS Authoring tool geared toward non-technical users
3. **Artifacts:** Identify and codify new CDS artifacts for care, in the domain of pain management and opioids
4. **Pilot:** Pilot CDS artifacts in a live, *clinical* setting
5. **Work Groups:** Convene external discussions focused on accelerating evidence into practice through CDS

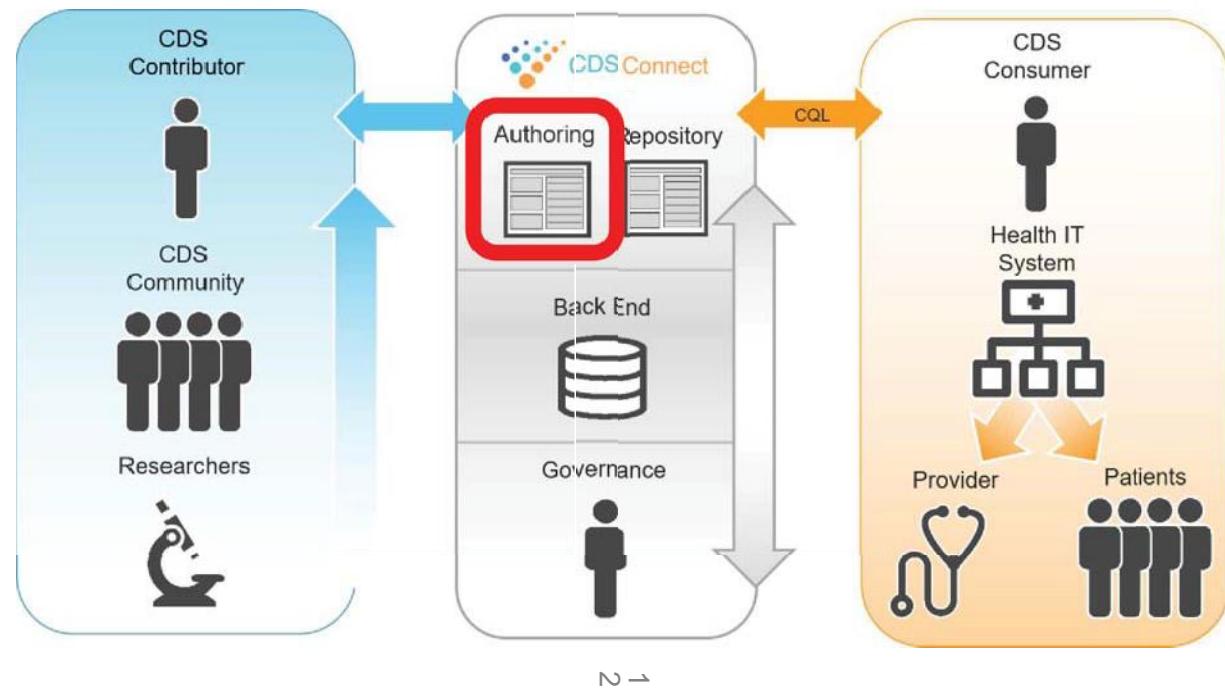
Sponsor:

- Agency for Healthcare Research and Quality

Concept of Operations



Concept of Operations



CDS Authoring Tool <https://cds.ahrq.gov/authoring/build/5a302d5e8df77600147509b9>

Inclusions Exclusions Subpopulations Recommendations Parameters Handle Errors

CVD and statin

Age Range

Element Name: Age of Patient
Minimum Age: 35
Maximum Age: 70
-- Check Existence --
Return Type: Boolean

Add Expression

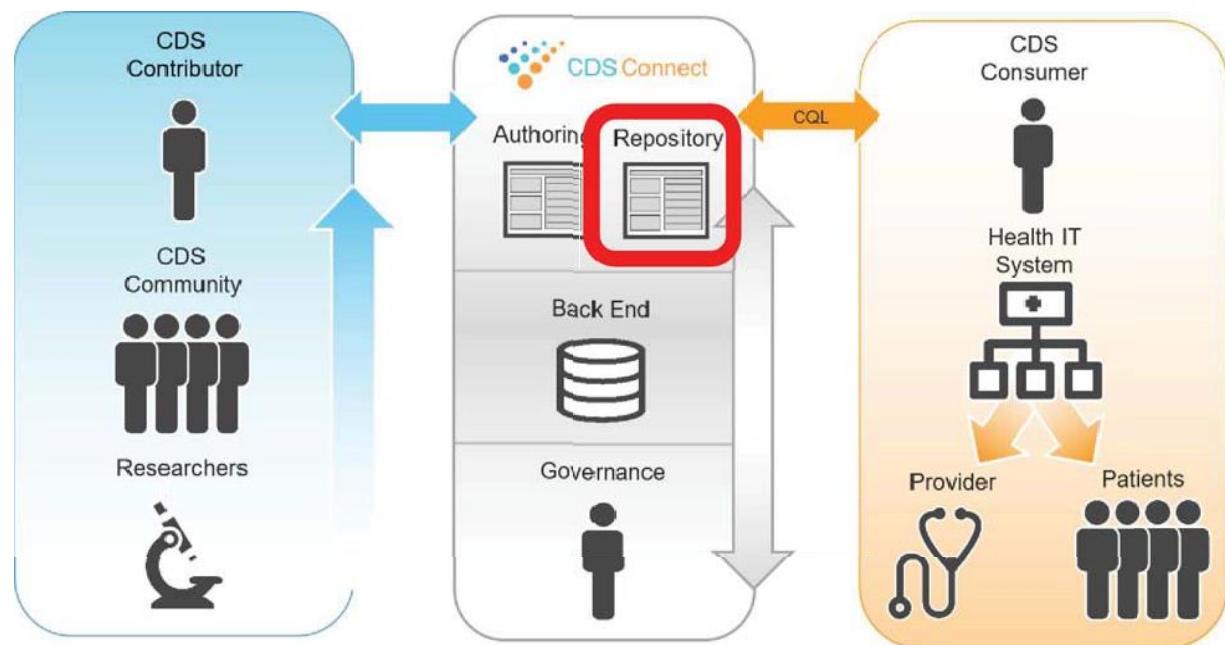
And

ASCVD Risk Assessment

Element Name: ASCVDRiskAssessment
Most Recent
Quantity Value

Download CQL Save

Concept of Operations



The screenshot shows a web browser window displaying the CDS Connect platform. The URL in the address bar is <https://cds.ahrq.gov/cdsconnect/artifact/statin-use-primary-prevention-cvd-adults>. The page title is "Statin Use for the Primary Prevention of CVD in Adults". The top navigation bar includes links for CDS Connect, About, Explore, Workgroup, Governance, Authoring, and FAQ. Below the navigation, a breadcrumb trail shows "Welcome to CDS Connect / Artifacts / Statin Use for the Primary Prevention of CVD in Adults".

Artifact Summary:

Presents a United States Preventive Services Task Force (USPSTF) statin therapy recommendation for adults aged 40 to 75 years without a history of cardiovascular disease (CVD) who have 1 or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking) and a calculated 10-year CVD event risk score of 7.5% or greater.

Artifact Type: Event-Condition-Action (ECA) rule

Creation Date: Mon, 07/10/2017 - 12:00

Version: 0.1.0 **Identifier:** CDS 009

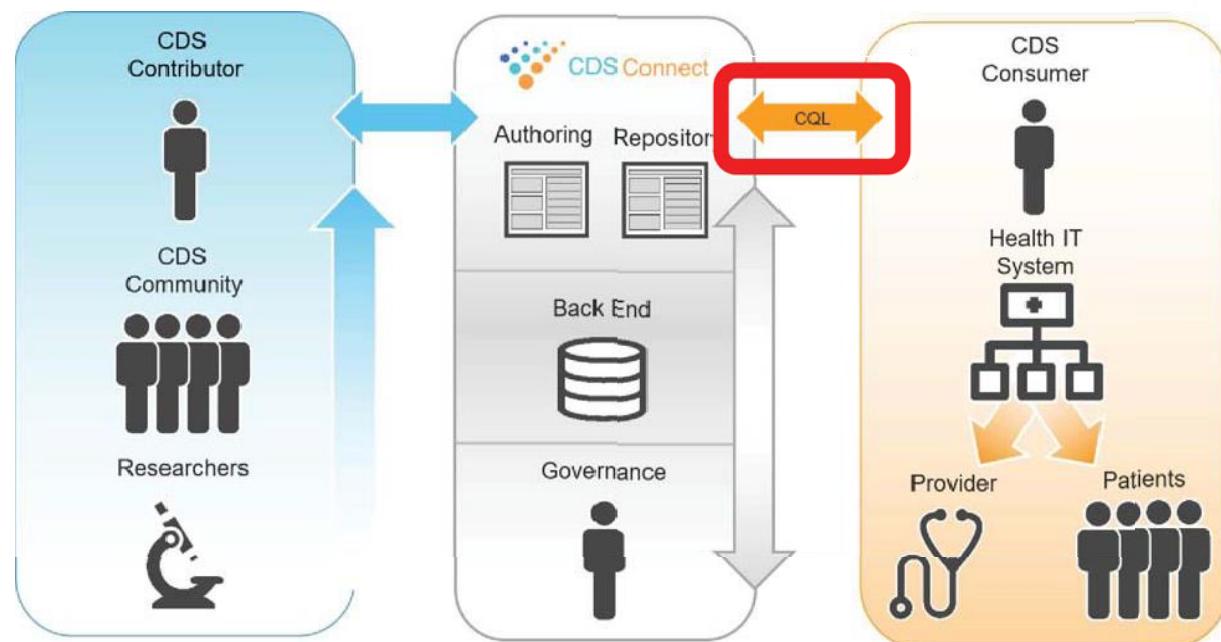
Status: Active **Experimental:** False

PROMINENT REPORTS:

Detailed report on the pilot implementation of this artifact (DOC 2.7Mb)

Artifact enhancements based on pilot implementation findings (DOC 91Kb)

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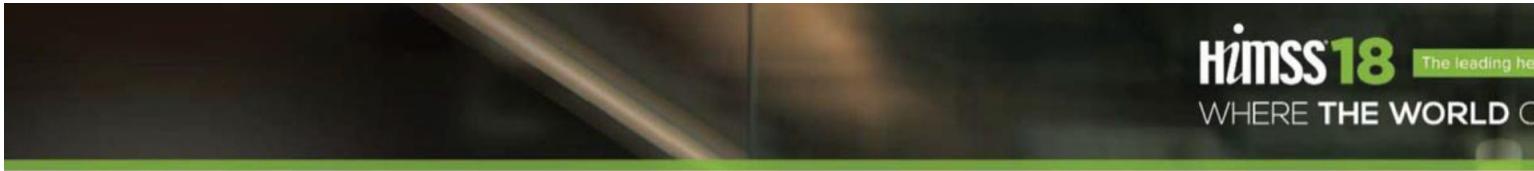


What is the Clinical Quality Language (CQL)?

“The Clinical Quality Language Specification defines a representation for the expression of clinical knowledge that can be used within both the Clinical Decision Support (CDS) and Clinical Quality Measurement (CQM) domains.”

Reference: *HL7 Standard: Clinical Quality Language Specification, DSTU Release 1.*

What is the Clinical Quality Language (CQL)?



CQL – Key Points

- The CQL specification defines two components:
 - **Clinical Quality Language:** Author-friendly domain specific language
 - **Expression Logical Model:** Computable XML or JSON
- CQL leverages best practices and lessons learned from:
 - **Quality Data Model:** Focus on ease of authoring
 - **Health eDecisions:** Focus on modularity and computability
 - **eCQM & CDS Communities:** HL7 Work Groups and S&I Framework
- CQL is designed to work with any data model

CQL Example: Last Systolic Blood Pressure

CDS Governance

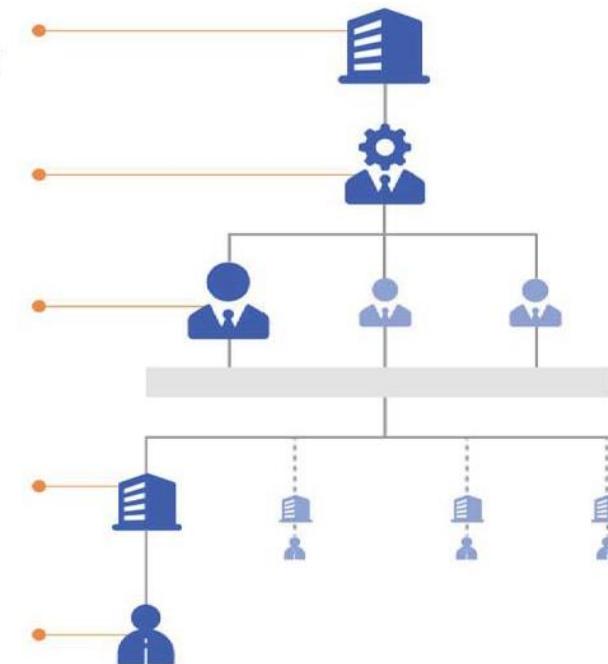
- Governing Organization (GO)
 - Owns and oversees Repository
 - Currently exclusively AHRQ

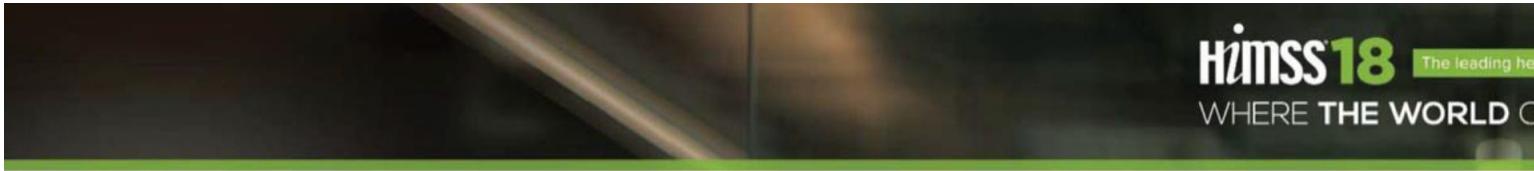
- Governing Organization Lead
 - Represents and reports to GO

- #### Governor

- Publishing Organization (PO)
 - Legally owns CDS content
 - Responsible for clinical perspectives

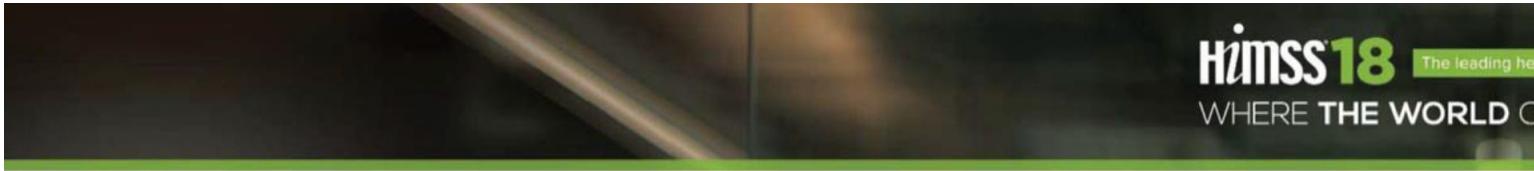
- Publishing Organization Lead
 - Represents and reports to PO





CDS Artifact Development

- Identify and develop new CDS artifacts for initial content of the CDS Connect Repository
 - Drives CDS Repository and CDS Authoring Tool software requirements
 - Provides an example to potential contributors to the CDS Repository
- 2017: Development focused in the clinical domain of cholesterol management
- 2018: Development focused in the clinical domain of opioids and pain management
 - Embracing a self-service user model
 - Encouraging the CDS Connect community to contribute content directly on the CDS Repository, and through the CDS Authoring Tool



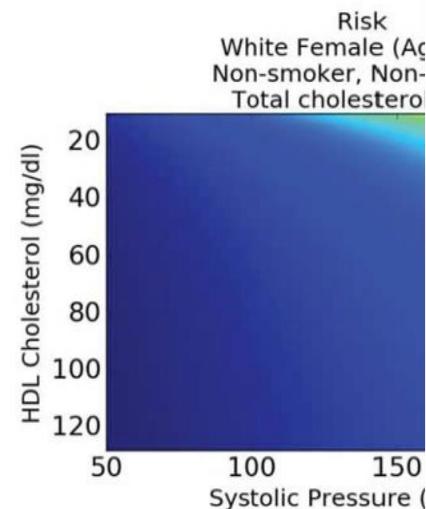
Example: American College of Cardiology and American Heart Association Baseline Risk Model

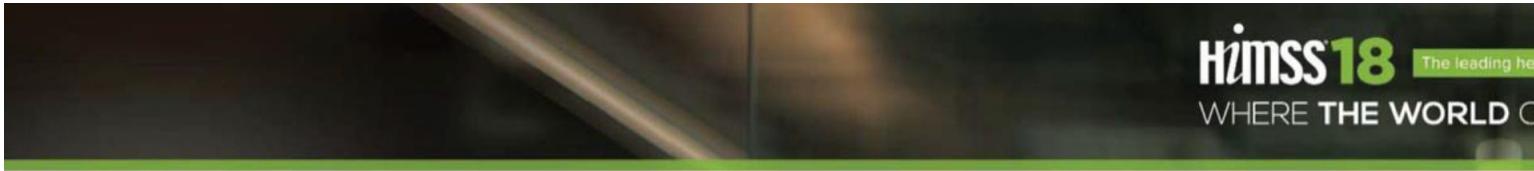
- **Binomial inputs**

- Current smoker (yes/no)
- Diabetes (yes/no)
- Treated for high blood pressure (yes/no)

- **Multinomial inputs**

- Age (years)
- Total cholesterol (mg/dl)
- HDL cholesterol (mg/dl)
- Systolic blood pressure (mm Hg)

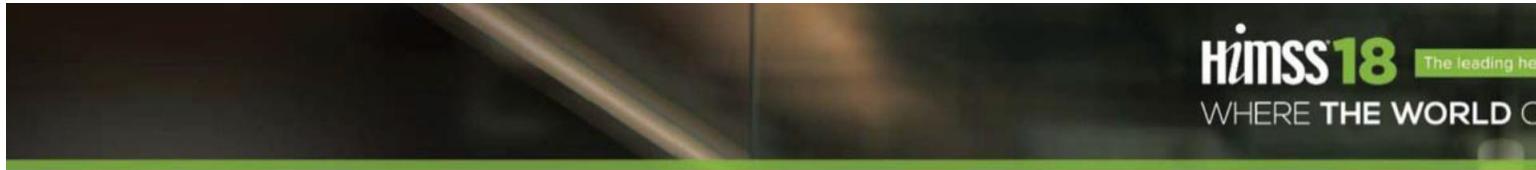




Potential Future Evolution: “CDS as a Service”

- With a Repository and machine-computable CDS artifacts, clinical practices will be able to:
 - Download and integrate these CDS artifacts into health IT systems more rapidly
 - Adapt to changing clinical standards of care through the interoperable definition of CDS
 - Better support the concept of the “*Learning Health System*” by embedding within the clinical delivery process, all the new knowledge captured as by-product of the healthcare delivery experience

Potential Future Evolution: “CDS as a Service”



Questions

- AHRQ CDS Initiative
 - <http://cds.ahrq.gov>
- AHRQ CDS funding opportunities:
 - <https://www.ahrq.gov/funding/fund-ops/index.html>
- Contact information
 - Edwin.Lomotan@ahrq.hhs.gov
 - rob@mitre.org