



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



August 2021 CDS Connect Work Group Call



CDS Connect

Agenda

Schedule	Topic
• 3:00 - 3:02	• Roll Call, Michelle Lenox (MITRE)
• 3:02 - 3:05	• Review of the Agenda, Maria Michaels (CDC)
• 3:05 - 3:50	• An Introduction to AHRQ CEDAR (AHRQ; MITRE CEDAR Team)
• 3:50 - 3:55	• What's New with CDS Connect This Month (MITRE)
• 3:55 - 4:00	Open Discussion and Close Out, Maria Michaels (CDC) <ul style="list-style-type: none">• Open discussion and announcements• Concluding comments, review next steps and adjourn

Objectives

- Discuss topics of interest to members relating to opportunities for CDS Connect
- Introduce AHRQ CEDAR project and discuss opportunity for Work Group members
- Share new features and resources available for CDS Connect

AN INTRODUCTION TO AHRQ CEDAR

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Pete Krautscheid, Michelle Caputy, Allen Leavens (MITRE CEDAR Team)



Outline



- Introduction to AHRQ CEDAR
- Technical Approach
- Demonstration
- Testing FAIRness
- Pilot Discussion
- Questions

Background



- AHRQ is required to disseminate patient-centered outcomes research (PCOR) findings into clinical practice through clinical decision support (CDS)
 - ▶ Use of CDS helps promote timely uptake of PCOR findings and facilitates the ability to gather stakeholder feedback about the value of the information provided
 - ▶ Origin of CDS Connect
- AHRQ's Center for Evidence and Practice Improvement (CEPI) has invested in other resources and programs that house PCOR findings
- Work is still needed to make PCOR evidence more FAIR: Findable, Accessible, Interoperable, and Reusable

AHRQ CEDAR: Introduction

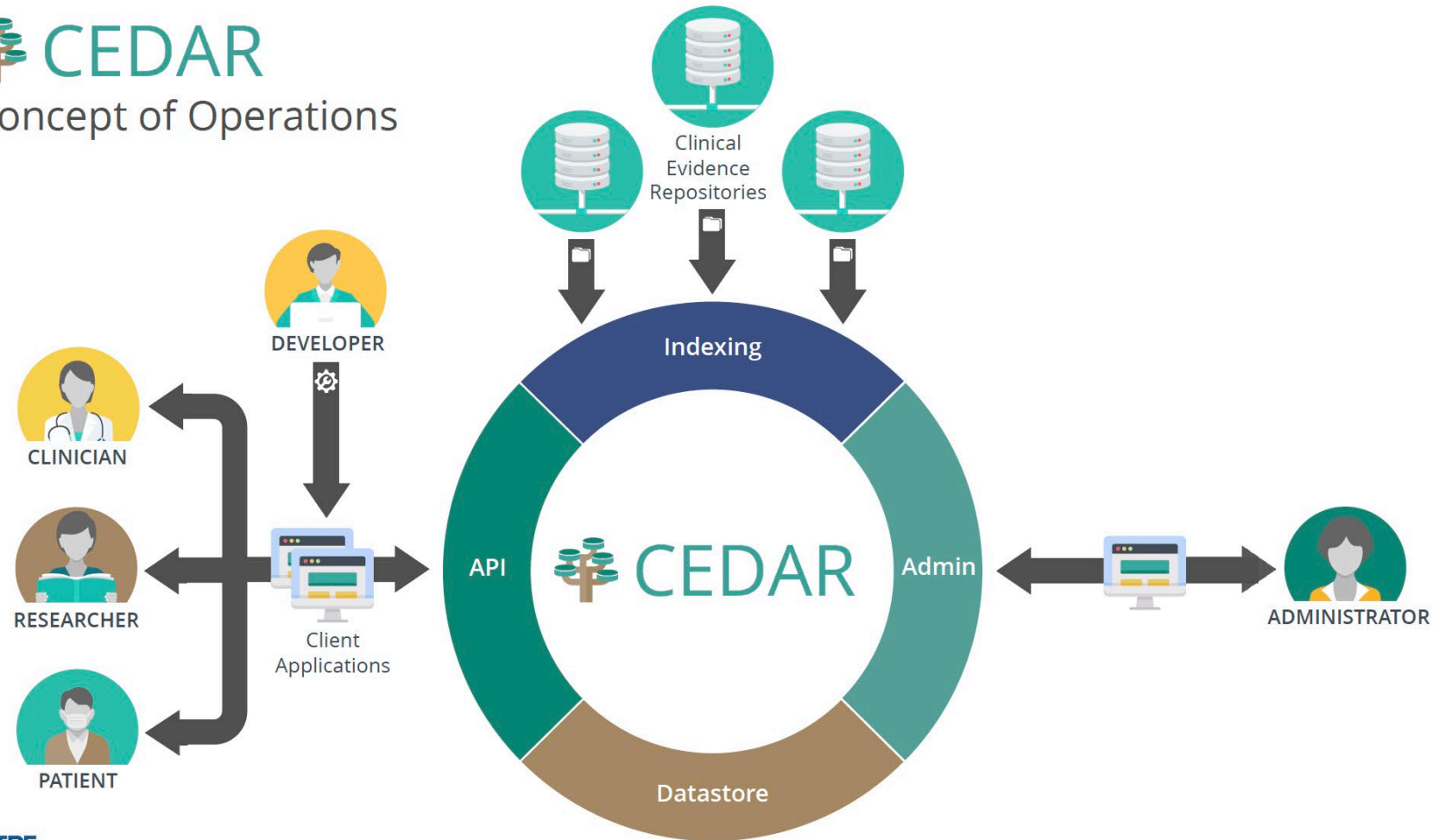


- Challenge:
 - ▶ CEPI maintains several repositories with different types of PCOR evidence
 - ▶ Each repository has been built independently at different times, resulting in different architectures
 - ▶ This means that automating discovery and retrieval of PCOR content is more difficult
- Goals:
 - ▶ Make PCOR research evidence held in CEPI resources and programs more FAIR
 - ▶ Accelerate the time between the production of research evidence and its use in routine practice
- To achieve these goals, AHRQ and MITRE are developing the CEPI Evidence Discovery And Retrieval (CEDAR) reference implementation

TECHNICAL APPROACH

Technical Approach: Concept of Operations

CEDAR Concept of Operations



Technical Overview

- CEDAR provides a machine-accessible interface to repository data.
 - ▶ CEDAR's application programming interface (API) offers search and review artifacts in multiple CEPI repositories in one place
 - ▶ Supports Fast Healthcare Interoperability Resource (FHIR®) search requests and leverages the FHIR® Citation Resource to represent artifact metadata
- Periodic reindexing
 - ▶ CEDAR periodically reindexes each supported repository
 - ▶ Approach depends on the capabilities of the repository
- Open-source software
 - ▶ CEDAR uses open-source components when possible
 - ▶ Anticipated to be released as open source at the conclusion of the contract

Technical Overview: Deployment



CEDAR is deployed as a set of Docker containers:

- **CEDAR API:** A Ruby and Sinatra container implementing the CEDAR Search API functionality
- **CEDAR Admin:** A Ruby on Rails container implementing a web application for CEDAR administrators (logging functions, etc.)
- **CEDAR Indexing:** A Ruby on Rails container implementing the repository indexing process
- **CEDAR Datastore:** PostgreSQL database-based container providing a centralized datastore for CEDAR

Technical Overview: Client Applications

- CEDAR will develop at least one Client Application
 - ▶ Based on functional requirements
 - ▶ Demonstrates CEDAR capabilities
 - ▶ Guides development of future context-specific client applications
- Development
 - ▶ Traditional web technologies to provide a human-accessible interface to CEDAR
 - ▶ FHIR Adaptor supports mapping between user search criteria and results and standard FHIR resources

DEMONSTRATION

TESTING FAIRNESS

Testing FAIRness: Overview and Process

- CEDAR is intended to increase the FAIRness of the PCOR findings in AHRQ repositories
- To demonstrate increased FAIRness:
 - ▶ Developed a stand-alone tool to assess the FAIRness of PCOR findings
 - 14-question tool applies and adapts the FAIR guiding principles to align with the Health IT aspects of PCOR findings
 - Includes a scoring methodology that provides an overall “level” of FAIRness
- As CEDAR development continues, the levels of FAIRness of the underlying PCOR findings is expected to increase
 - ▶ Regular assessments using the tool will establish areas of improvement and areas where additional work is needed

Testing FAIRness: Example

Example: A FAIR guiding principle applied to develop a criterion, description of the criterion, and scoring element

Criteria #	Criteria	Description	Scoring
F1.1.1	Artifacts have a persistent identifier as a metadata element	To ensure that data and metadata are findable over time. Persistence is a guarantee that an identifier will remain; this is the responsibility of the repository owner and is measured by the presence of this identifier and/ or the intent to maintain persistence.	Levels: 0 = No 2 = unclear 3 = Yes

Scores for each criterion are summed to assign an overall level of FAIRness (Levels 1 to 5)

PILOT DISCUSSION

Pilot Goal and Objectives



- Goal: Demonstrate the CEDAR reference implementation in a real-world setting with target end users of the prototype infrastructure
- Objectives:
 - ▶ Demonstrate time- and cost-savings from providing access to multiple AHRQ resources in one place
 - ▶ Improve awareness of other AHRQ CEPI resources and artifacts available to end users

Desired Pilot Partner Organization Characteristics



- Ability to demonstrate the current and future needs that CEDAR can fulfill
 - ▶ Develops, consumes, or applies PCOR evidence and findings
 - ▶ Experience with at least one AHRQ CEPI PCOR resource or program
- Technical ability and expertise
 - ▶ Ability to develop client applications using the CEDAR API, or ability to deploy client applications incorporating the CEDAR API

Additional details will be discussed with each interested potential pilot partner organization during the pilot engagement process

Estimated Pilot Timeline

- Identify and engage potential pilot partners *2 months*
- Contracting and planning *2 months*
- Pilot kick-off and live pilot *3 months*
- Pilot close and wrap up *2 months*

QUESTIONS?

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WHAT'S NEW WITH CDS CONNECT

Chris Moesel and Matt Coarr, MITRE

Updates and New Features



- **Authoring Tool**

- ▶ Improved support for using base elements as arguments to external CQL functions
- ▶ Updated Value Set Authority Center (VSAC) integration to use new FHIR R4 API endpoints
- ▶ Ongoing work toward implementation of a “query builder” supporting more complex CQL queries
- ▶ Bug fixes and continued updates to support reusability and maintainability

- **Artifacts**

- ▶ Updating Implementation Guides and CQL logic for the following artifacts (*in progress*):
 - CMS’s Million Hearts® Model Longitudinal ASCVD Risk Assessment Tool for Baseline 10-Year ASCVD Risk
 - Abnormal Blood Glucose and Type 2 Diabetes Mellitus: Part One, Screening
 - Abnormal Blood Glucose and Type 2 Diabetes Mellitus: Part Two, Counseling
 - Healthful Diet and Physical Activity for CVD Prevention in Adults with Cardiovascular Risk Factors

- **Repository**

- ▶ Updated FAQ content and new welcome message on main repository page
- ▶ Deployed updates to sign up form for requestors to indicate how they learned about CDS Connect
- ▶ Deployed taglines on summary reports for enhanced findability
- ▶ Updated Work Group content with request for presentations on best practices and platform improvements
- ▶ CPG-on-FHIR work continues
- ▶ Software updates and security patches
- ▶ Drupal 9 upgrade: all used modules now updated to compatible versions and custom code changed to remove deprecated API calls. Deploying and testing on new Acquia cloud environment
- ▶ Technical support for Repository contributors

ANNOUNCEMENTS, OPEN DISCUSSION AND CLOSE-OUT

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