



NATIONAL ASSOCIATION OF
Community Health Centers®

UDS+: Modernizing Health Center Program Data Reporting Strategies by Leveraging Data Interoperability Standards to Advance Patient-Centered Care Delivery and Health Equity

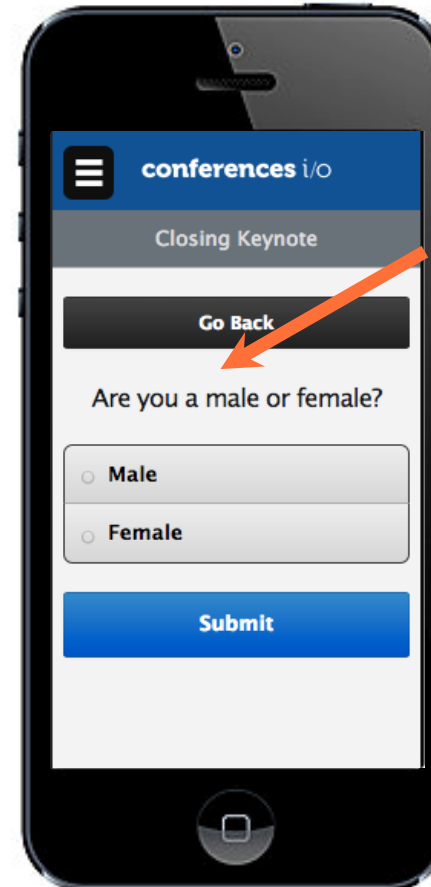
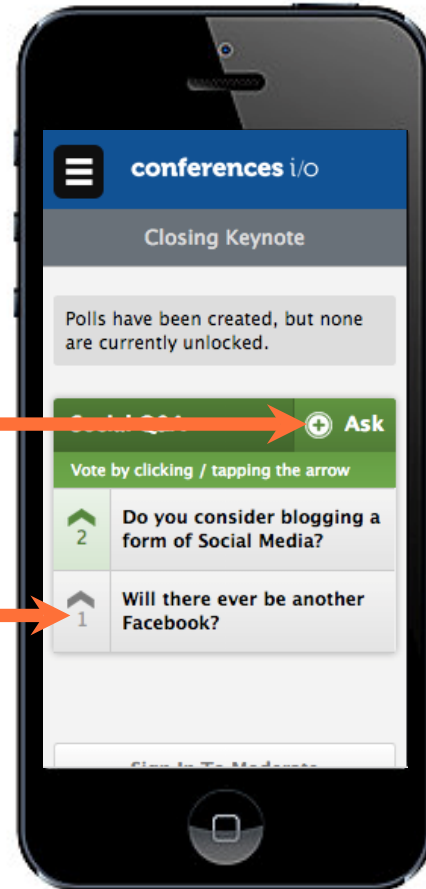
Monday, October 31 | 1:15pm – 2:30pm
Augustus 3-4, Caesars Palace
Las Vegas, NV



In-Person Participants

**Give us
Feedback**

**Up-Vote a
Comment**



**Click on
question and
then
Respond to
Polls when
they appear**

Vote / Give Feedback/ Respond to Polls

Virtual Participants

Chat

(use to talk with peers)



Polling/Q&A

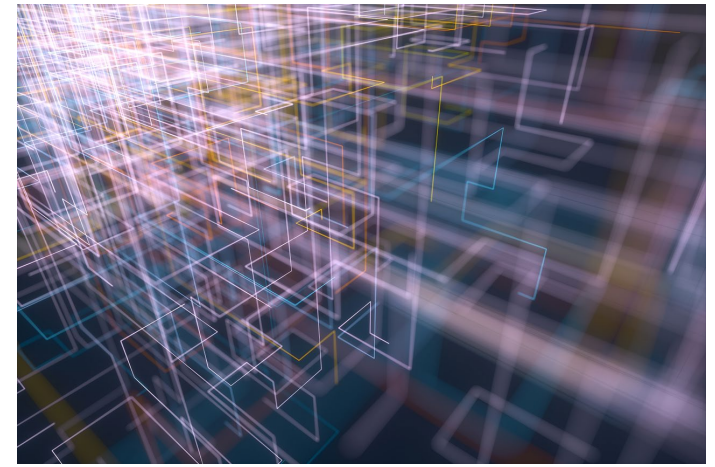
(participate in polls, ask questions to faculty)



The screenshot displays a virtual meeting interface. On the left, there is a sidebar with several panels: 'Session Info', 'Chat', 'Polling', 'Questions', and 'Resources'. The 'Chat' panel shows a list of participants and their messages. The 'Polling' panel displays a poll question: '#1.) What is your biggest business writing challenge? (NO RIGHT ANSWER - OPEN QUESTION)'. The poll results are shown as a bar chart: Conclusion (45%), Grammar and/or Types (20%), Content Structure (16%), Tone (16%), and Other (0%). The main area of the interface shows a video feed of a man speaking. To the right of the video feed is a presentation slide titled 'UDS Reporting: Preparing, Doing, and Utilizing' with the subtitle 'Cultivating Health Center Operations'. The slide features a colorful graphic of a heart and the CURIS logo. At the bottom of the interface, there is a navigation bar with links for 'Session', 'Support', 'Profile', 'Options', and 'Windows'. The bottom right corner of the interface shows the 'Digitell' logo.

UDS Modernization: UDS+

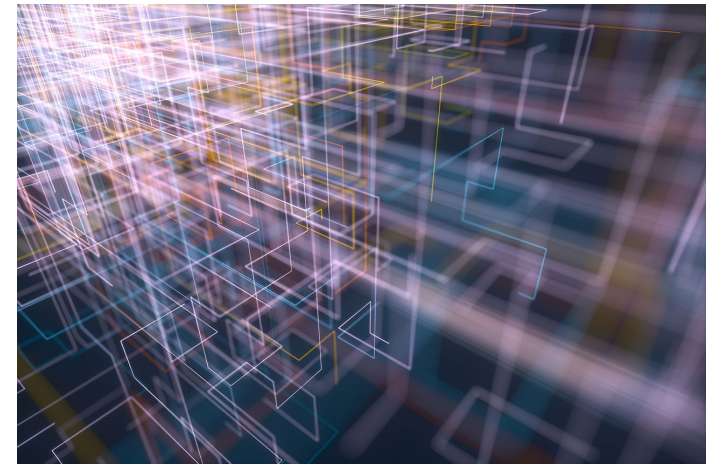
Moving towards EHR Data Reuse and Reducing Burden



- To build a learning health system, data capture should be focused on that which adds value to the delivery of care and the achievement of wellness
- All other activities should flow from the reuse of this data
- HRSA is proposing to move towards evaluation of CHCs via data reuse
- This data reuse relies on shared health IT (HIT) standards and their implementation across the industry

UDS Modernization: UDS+

Moving towards EHR Data Reuse and Reducing Burden



- The ultimate payoff of UDS+ should be:
 - Automation of reporting to HRSA and elimination of manual reporting activities
 - Ability to identify and dashboard UDS patients and measures within the EHR, Data HIT product and/or Data Warehouse
 - Improved validity and completeness of UDS metrics



UDS Patient-Level Submission (UDS+)

NACHC 2022 Financial, Operations Management / IT (FOM/IT)

October 31, 2022

Hank Hoang, Deputy Director, Data and Evaluation (HRSA)

Matthew Rahn, Deputy Director, Standards Division (ONC)

Health Resources & Services Administration (HRSA)

Vision: Healthy Communities, Healthy People



Disclosures

Hank Hoang and Matt Rahn have no relevant financial or non-financial interests to disclose.



Speakers



Hank Hoang, PharmD

Deputy Director, Data and Evaluation
Health Resources and Services
Administration



Matthew Rahn

Deputy Director, Standards Division
Office of the National Coordinator for Health IT



Overview and Learning Objectives

Session Overview:

- Uniform Data System patient-level submission (UDS+) Overview
- ONC Initiatives and HRSA Collaboration Overview
- UDS+ Progress
- Participant Q&A
- Resources

Learning Objectives:

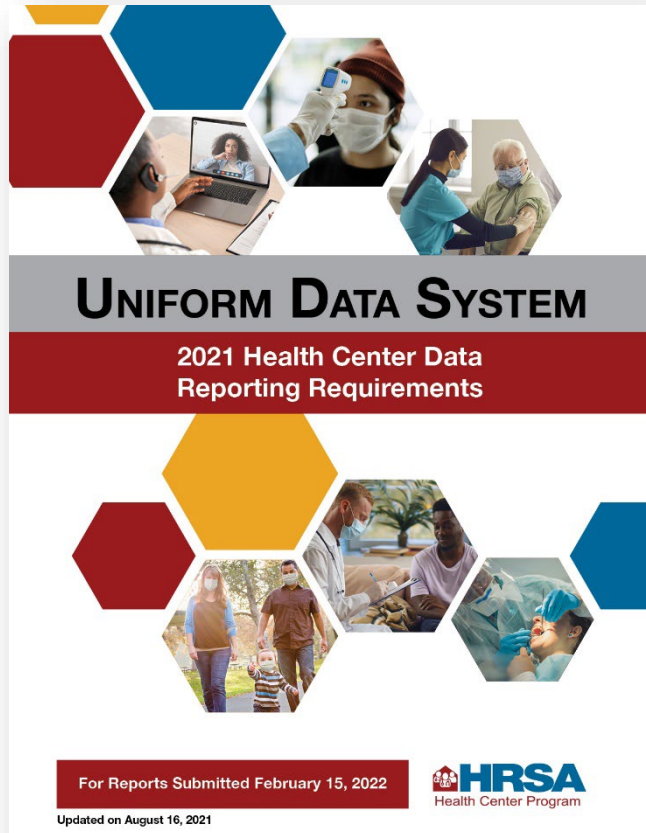
- Understand the history of FHIR and how United States Core Data for Interoperability (USCDI) standards can help enhance Health Center Program data reporting needs
- Understand what UDS+ is and its purpose
- Learn about essential operational and health IT updates on UDS+
- Identify where to locate UDS+ resources, references, and future updates (including news on reporting formats and submission expectations)

Knowledge Check 1

True or False: Health centers and look-alikes submit a UDS report every quarter.

- ✓ False. All health centers that receive federal funds and those considered Health Center Program look-alikes are required to complete the UDS on an annual basis.

What is the UDS?



- The Uniform Data System (UDS) is a standard data set that is reported annually and provides consistent information about health centers, including:
 - Patient characteristics
 - Services provided
 - Clinical processes and health outcomes
 - Patients' use of services
 - Staffing
 - Costs and revenues

UDS Data Elements

What does it capture?

Data Element Category	Tables and Forms
Demographics	<ul style="list-style-type: none">• Patients by ZIP Code Table• Table 3A: Patients by Age and Sex assigned at birth• Table 3B: Race/Ethnicity and Sexual Orientation and Gender Identity (SOGI)• Table 4: Income (% FPG), Insurance Status, Special Populations (Ag. works, Homeless, Veteran, etc.)
Staffing	<ul style="list-style-type: none">• Table 5: FTE type (Physicians, Mental Health, Dental, etc.), Visits, and Patients• Table 5: Service Detail Addendum
Clinical	<ul style="list-style-type: none">• Table 6A: Diagnoses and Services Rendered• Table 6B: Clinical Quality Measures (Process)• Table 7: Clinical Quality Measures (Outcome)
Financial	<ul style="list-style-type: none">• Tables 8A: Financial Costs• Table 9D: Patient Related Revenue• Table 9E: Other Revenue (Including grant/contract revenue, H80)
Other	<ul style="list-style-type: none">• Appendix D: Health Information Technology (HIT)• Appendix E: Other Data Elements – MAT• Appendix F: Workforce



For more information, read the [UDS General Information Fact Sheet](#) and the [2021 UDS Manual](#) (pg. 12-13)

UDS Patient Level Submission (UDS+) Overview

UDS+ is...

- Beginning with the 2023 UDS, BPHC will accept patient-level report data.
 - UDS Tables PBZC, 3A, 3B, 4, 6A, 6B, and 7

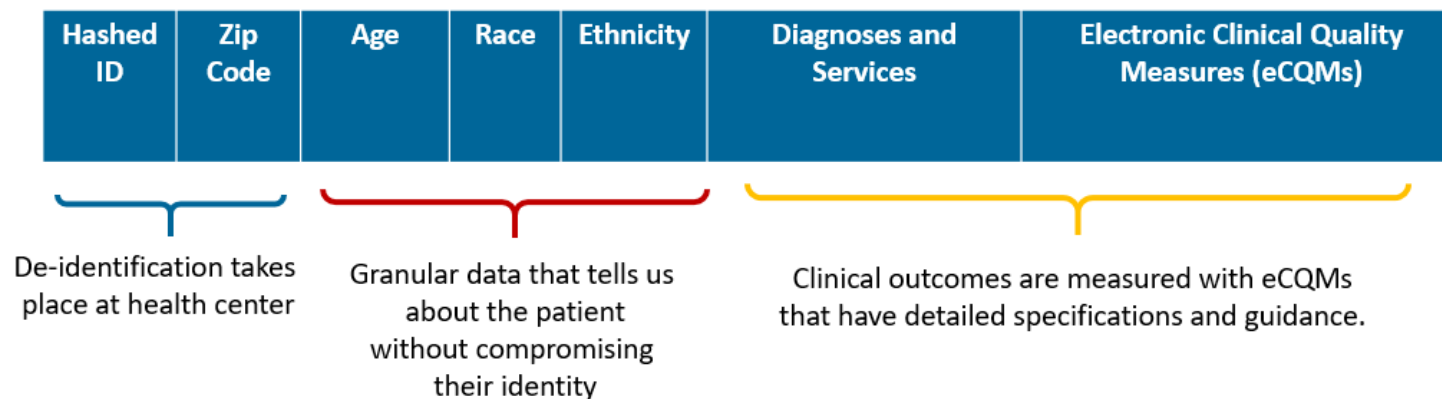
BPHC plans to accept UDS+ data in two ways:

- Manual file upload system & Fast Healthcare Interoperability Resources (FHIR)

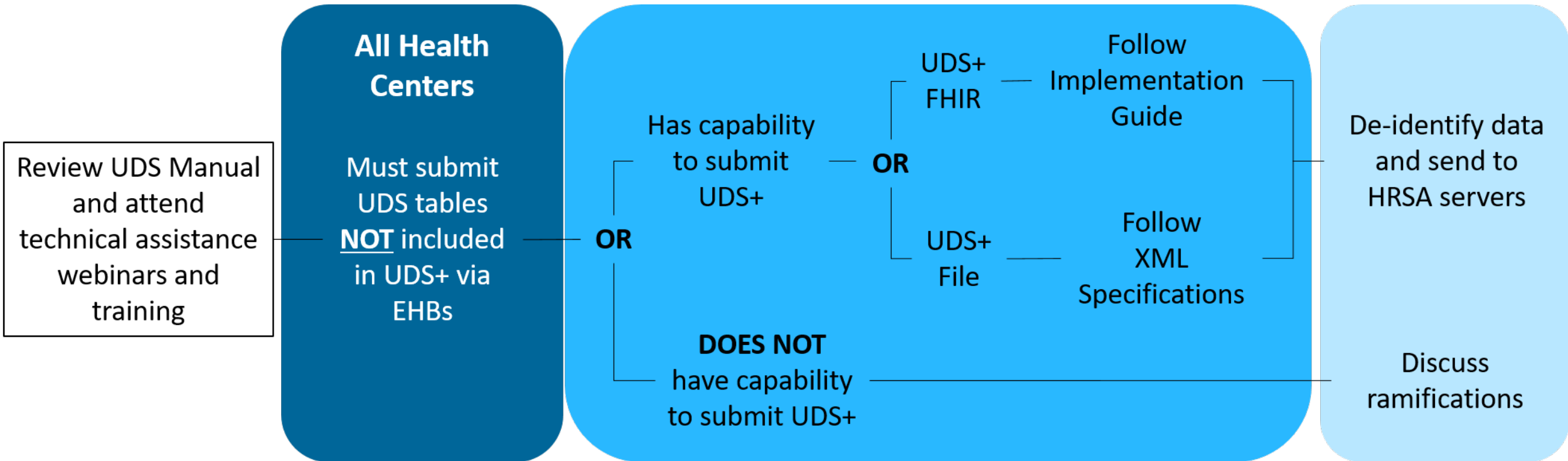
UDS+ does not...

- Collect full copies of data directly from patients' electronic medical records
- Collect patient identifiers

For more information, visit: [Uniform Data System \(UDS\) Modernization Initiative](#)



UDS+ Reporting Structure



BPHC is seeking volunteers for development and testing of proposed systems.
Please indicate your interest via the [BPHC Contact Form](#).



Knowledge Check 2

As a part of UDS+, which of the following will NOT be reported at patient-level?

- a) Patient Demographics (3A, 3B, 4)
 - b) Diagnoses and Services and Quality of Care Measures (6A, 6B)
 - c) Health Outcomes and Disparities (7)
 - d) Patient Related Revenue (9D)
- ✓ D. Patient related revenue will not be reported at patient level. Patient sociodemographics (Tables 3A, 3B, 4) and clinical quality measures (Tables 6A, 6B, and 7) will be reported at the patient-level.

Knowledge Check 3

True or False: UDS Patient-Level Submission (UDS+) must be de-identified.

✓ True. All data submitted via UDS+ will be deidentified before reaching HRSA.

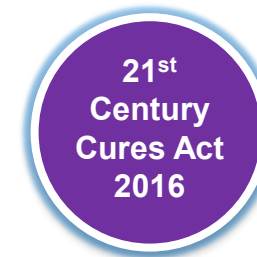
ONC Initiatives and HRSA Collaboration Overview

Office of the National Coordinator for Health IT



ONC and the 21st Century Cures Act

- ONC is charged with formulating the **federal government's health IT strategy** to advance national goals for better and safer health care through an **interoperable nationwide health IT infrastructure**



Laying the foundation of EHRs across the industry

- \$40B CMS investment to subsidize EHRs for hospitals and ambulatory providers
- ONC certification of EHR systems to support CMS and CDC programs

Leveraging EHRs to drive value

- Prohibits providers, technology developers, and health information networks from “information blocking” (“preventing, discouraging, or interfering with access, exchange, or use of information”)
- Requires access to information through APIs “without special effort”
- Requires nationwide governance for health information exchange networks – Trusted Exchange Framework and Common Agreement



Move to Fast Healthcare Interoperability Resources (FHIR) based Health Information Exchange

Meaningful Use (MU)

- American Recovery and Reinvestment Act (ARRA)
- Health Information Technology for Economic and Clinical Health (HITECH Act)
- Consolidated Clinical Document Architecture (C-CDA) Transitions of Care
- Patient Portal, Electronic Clinical Quality Measures (eCQMs), Registry, Security

Medicare Access and CHIP Reauthorization Act (MACRA)

- 2015 Edition of Certification
- Application Programming Interface (API) Requirement
- Initial Common Data Elements (CDEs): Vital Signs, Date of Birth
- Unique Device Identification (UDI) for Medical Devices, Health Concerns, Goals

21st Century Cures

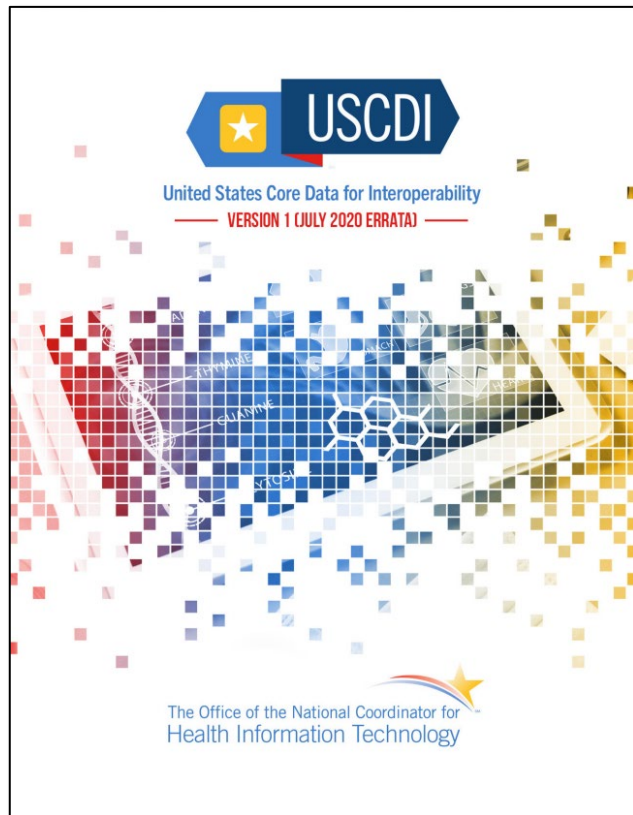
- Federal Health Information Technology Strategic Plan
- Migration of MU Common Clinical Data Set to United States Core Data for Interoperability (USCDI)
- Removing barriers to data sharing for clinical use
- EHR Vendors Required to Implement FHIR (by the of 2022)

2022 and Beyond Future

- Centers for Medicare and Medicaid Services (CMS) moves to digital quality measures
- United States Core Data for Interoperability (USCDI) version 2 & 3
- United States Core Data for Interoperability Plus (USCDI+)



United States Core Data for Interoperability (USCDI)



USCDI v1 Summary of Data Classes and Data Elements

Allergies and Intolerances <ul style="list-style-type: none"> Substance (Medication) Substance (Drug Class) Reaction 	Laboratory <ul style="list-style-type: none"> Tests Values/Results 	Smoking Status <ul style="list-style-type: none"> Smoking Status
Assessment and Plan of Treatment <ul style="list-style-type: none"> Assessment and Plan of Treatment 	Medications <ul style="list-style-type: none"> Medications 	Unique Device Identifier(s) for a Patient's Implantable Device(s) <ul style="list-style-type: none"> Unique Device Identifier(s) for a Patient's Implantable Device(s)
Care Team Members <ul style="list-style-type: none"> Care Team Members 	Patient Demographics <ul style="list-style-type: none"> First Name Last Name Previous Name Middle Name (incl Middle Initial) Suffix Birth Sex Date of Birth Race Ethnicity Preferred Language Current Address Previous Address Phone Number Phone Number Type Email Address 	Vital Signs <ul style="list-style-type: none"> Diastolic Blood Pressure Systolic Blood Pressure Body Height Body Weight Heart Rate Respiratory Rate Body Temperature Pulse Oximetry Inhaled Oxygen Concentration BMI Percentile (2 - 20 Years) Weight-for-length Percentile (Birth - 36 Months) Head Occipital-frontal Circumference Percentile (Birth - 36 Months)
Clinical Notes <ul style="list-style-type: none"> Consultation Note Discharge Summary Note History & Physical Imaging Narrative Laboratory Report Narrative Pathology Report Narrative Procedure Note Progress Note 	Problems <ul style="list-style-type: none"> Problems 	
Goals <ul style="list-style-type: none"> Patient Goals 	Procedures <ul style="list-style-type: none"> Procedures 	
Health Concerns <ul style="list-style-type: none"> Health Concerns 	Provenance <ul style="list-style-type: none"> Author Time Stamp Author Organization 	
Immunizations <ul style="list-style-type: none"> Immunizations 		

- **ONC standard for minimum dataset required for interoperability**
 - Defines required data elements and vocabulary standards
 - Agnostic to format
- **Updated on annual cycle with federal agency and industry input**
 - Updates based on multiple criteria including standards maturity and public/industry priority

USCDI Evolution Supports 21st Century Cures Act

- USCDI v1 is required by Cures Act Final Rule and added four data elements: clinical notes, provenance, pediatric vital signs and address
- USCDI v2 added three data classes and 22 data elements in support of advancing health equity (SOGI and SDOH)
- USCDI v3 addressed equity, disparities and public health data interoperability, and new Medication data elements

USCDI v1 Summary of Data Classes and Data Elements		USCDI v2 Summary of Data Classes and Data Elements		USCDI v3 Summary of Data Classes and Data Elements		
Allergies and Intolerances <ul style="list-style-type: none"> Substance (Medication) Substance (Drug Class) Reaction 	Laboratory <ul style="list-style-type: none"> Tests Values/Results 	Allergies and Intolerances <ul style="list-style-type: none"> Substance (Medication) Substance (Drug Class) Reaction 	Goals <ul style="list-style-type: none"> Patient Goals SDOH Goals 	Allergies and Intolerances <ul style="list-style-type: none"> Substance (Medication) Substance (Drug Class) Reaction 	Health Status/Assessments <ul style="list-style-type: none"> Health Concerns Functional Status Disability Status Mental/Cognitive Status Pregnancy Status Smoking Status 	Problems <ul style="list-style-type: none"> Problems SDOH Problems/Health Concerns Date of Diagnosis Date of Resolution
Assessment and Plan of Treatment <ul style="list-style-type: none"> Assessment and Plan of Treatment 	Medications <ul style="list-style-type: none"> Medication 	Assessment and Plan of Treatment <ul style="list-style-type: none"> Assessment and Plan of Treatment SDOH Assessment 	Health Concerns <ul style="list-style-type: none"> Health Concerns 	Assessment and Plan of Treatment <ul style="list-style-type: none"> Assessment and Plan of Treatment SDOH Assessment 	Immunizations <ul style="list-style-type: none"> Immunizations 	Procedures <ul style="list-style-type: none"> Procedures SDOH Interventions Reason for Referral
Care Team Members <ul style="list-style-type: none"> Care Team Members 	Patient Demographics <ul style="list-style-type: none"> First Name Last Name Previous Name Middle Name Middle Initial Suffix Birth Sex Date of Birth Race Ethnicity Preferred Language Current Address Previous Address Phone Number Phone Number Type Email Address 	Care Team Member(s) <ul style="list-style-type: none"> Care Team Member Name Care Team Member Identifier Care Team Member Role Care Team Member Location Care Team Member Telecom 	Laboratory <ul style="list-style-type: none"> Tests Values/Results 	Care Team Member(s) <ul style="list-style-type: none"> Care Team Member Name Care Team Member Identifier Care Team Member Role Care Team Member Location Care Team Member Telecom 	Laboratory <ul style="list-style-type: none"> Tests Values/Results Specimen Type Result Status 	Provenance <ul style="list-style-type: none"> Author Organization Author Time Stamp
Clinical Notes <ul style="list-style-type: none"> Consultation Note Discharge Summary Note History & Physical Imaging Narrative Laboratory Report Narrative Pathology Report Narrative Procedure Note Progress Note 	Problems <ul style="list-style-type: none"> Problems 	Clinical Notes <ul style="list-style-type: none"> Consultation Note Discharge Summary Note History & Physical Procedure Note Progress Note 	Patient Demographics <ul style="list-style-type: none"> First Name Last Name Previous Name Middle Name (Including Middle Initial) Suffix Sex (Assigned at Birth) Sexual Orientation Gender Identity Date of Birth Race Ethnicity Preferred Language Current Address Previous Address Phone Number Phone Number Type Email Address 	Clinical Notes <ul style="list-style-type: none"> Consultation Note Discharge Summary Note History & Physical Procedure Note Progress Note 	Medications <ul style="list-style-type: none"> Medications Dose Dose Unit of Measure Indication Fill Status 	Unique Device Identifier(s) for a Patient's Implantable Device(s) <ul style="list-style-type: none"> Unique Device Identifier(s) for a patient's implantable device(s)
Goals <ul style="list-style-type: none"> Patient Goals 	Procedures <ul style="list-style-type: none"> Procedures 	Clinical Tests <ul style="list-style-type: none"> Clinical Test Clinical Test Result/Report 	Problems <ul style="list-style-type: none"> Problems SDOH Problems/Health Concerns Date of Diagnosis Date of Resolution 	Clinical Tests <ul style="list-style-type: none"> Clinical Test Clinical Test Result/Report 	Patient Demographics/Information <ul style="list-style-type: none"> First Name Last Name Middle Name (Including middle initial) Name Suffix Previous Name Date of Birth Date of Death Race Ethnicity Tribal Affiliation Sex Sexual Orientation Gender Identity Preferred Language Current Address Previous Address Phone Number Phone Number Type Email Address Related Person's Name Related Person's Relationship Occupation Occupation Industry 	Vital Signs <ul style="list-style-type: none"> Systolic Blood Pressure Diastolic Blood Pressure Heart Rate Respiratory Rate Body Temperature Body Height Body Weight Pulse Oximetry Inhaled Oxygen Concentration BMI Percentile (2 - 20 years) Weight-for-length Percentile (Birth - 24 Months) Head Occipital-frontal Circumference Percentile (Birth- 36 Months)
Health Concerns <ul style="list-style-type: none"> Health Concerns 	Provenance <ul style="list-style-type: none"> Author Time Author Organization 	Diagnostic Imaging <ul style="list-style-type: none"> Diagnostic Imaging Test Diagnostic Imaging Report 	Encounter Information <ul style="list-style-type: none"> Encounter Type Encounter Diagnosis Encounter Time Encounter Location Encounter Disposition 	Diagnostic Imaging <ul style="list-style-type: none"> Diagnostic Imaging Test Diagnostic Imaging Report 		
Immunizations <ul style="list-style-type: none"> Immunizations 				Encounter Information <ul style="list-style-type: none"> Encounter Type Encounter Diagnosis Encounter Time Encounter Location Encounter Disposition 		
				Goals <ul style="list-style-type: none"> Patient Goals SDOH Goals 		
				Health Insurance Information <ul style="list-style-type: none"> Coverage Status Coverage Type Relationship to Subscriber Member Identifier Subscriber Identifier Group Number Payer Identifier 		



What are Fast Healthcare Interoperability Resources (FHIR)?

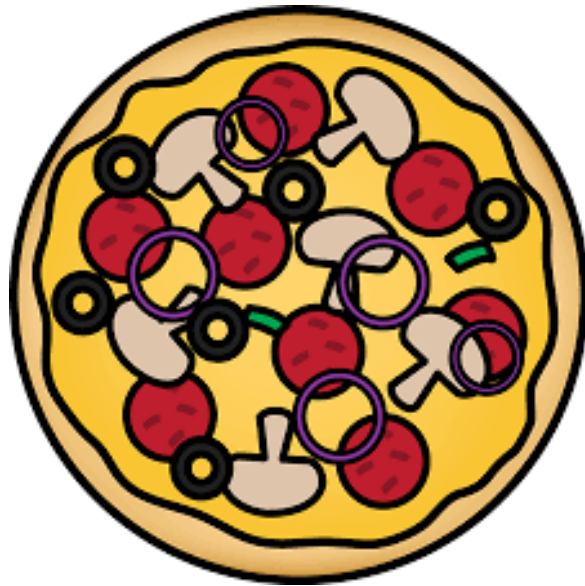
- FHIR is a Health Level 7 (HL7) standard that enables seamless information exchange of clinical records among providers, payers, patients, and federal agency data systems and results in coordinated, cost-efficient care
- FHIR (FHIR, pronounced "fire") describes data formats and elements (known as "resources") and application programming interfaces (APIs) for exchanging electronic health information
- The use of FHIR has been increasing over the last several years and has been expedited by the ONC Cures Act and the corresponding Standards Version Advancement Process (SVAP) process. These regulatory actions have enabled the industry to move towards implementing a standard set of APIs to access patient data



For a summary definition and most current FHIR version, visit the [HL7 website](#).

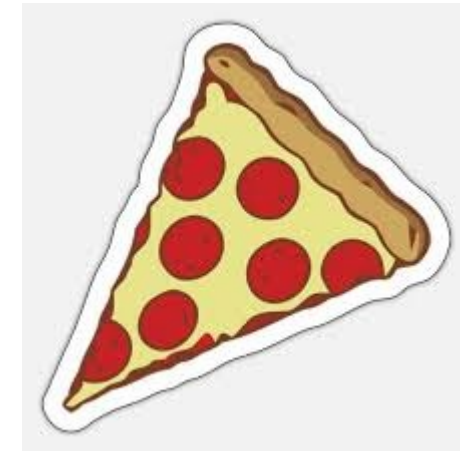
Why is FHIR different? Why is FHIR exciting?

If C-CDA is a deluxe pizza.....



You can't ask for just a slice of pepperoni
It's a snapshot of a whole set of data

FHIR is a specific slice



I only want a slice of pepperoni
More precise data access, less unneeded data exchanged
Allows for greater specialization of apps/services

FHIR API Requirements



- **Open “application programming interfaces” (APIs) and apps are what make it easy to check your bank account or buy stocks or order meal delivery on your smartphone**
 - We want providers and patients to have that same experience the health care system
- **21st Century Cures Act requires availability of APIs that can be accessed “without special effort”**
 - **ONC rule takes steps to prevent business and technical barriers to information-sharing**
- **By December 31, 2022, all certified technology developers required to deploy a standard FHIR API across their entire customer base**
 - Will create a climate for innovation as apps can now be developed that will work across all EHR systems

What is USCDI+

USCDI+ is a **service** that ONC provides to **USCDI+ partners**, in collaboration with their key stakeholders, who need to establish, harmonize, and advance the use of **interoperable datasets** that extend **beyond** the core data in the **USCDI** to meet agency-specific programmatic requirements

USCDI+ Program Overview & Goals

- **Collaborate** across USCDI partners, healthcare providers, and the health IT community to inform and support health IT advancement for priority use cases
- **Adopt** standards across relevant partners, including federal agencies, clinical stakeholders, the health IT community, public health agencies and users of health IT
- **Implement** specifications to ensure that the use of standards is aligned across federal programs and with key partners, including state, local, tribal, and territorial governments, across specialties and sites of service, improving interoperability on a national scale



USCDI vs USCDI+

USCDI	USCDI+
Comprises a core set of data needed to support patient care and facilitate patient access using health IT	Comprises a core set of data needed to specifically support the needs of USCDI+ partners
Establishes a consistent baseline of data elements that can be broadly reused across use cases , including those outside of patient care and patient access	Establishes a consistent baseline of data elements that are tailored to specific, high-priority, USCDI+ partners' use cases
Expands incrementally over time via a weighing both anticipated benefits and industry-wide impact	Expands rapidly over time via weighing federal USCDI+ partners' priorities and high impact use cases

ONC USCDI+ and HRSA UDS+ Collaboration

Objectives:

- Establish a USCDI+ dataset that would support UDS reporting
- Identify the other data quality and warehousing needs across HRSA's organizations
- Design, Test, Pilot, and Deploy HRSA's FHIR infrastructure for UDS+ Reporting
- Develop and Publish a UDS+ Reporting Implementation Guide



Draft UDS+ Implementation Guide (IG)



Uniform Data System (UDS) Patient Level Submission (PLS) - UDS+ IG 0.1.0 - CI Build



[IG Home](#) [Table of Contents](#) [UDS Background](#) [Specification](#) [Artifact Index](#) [Support](#)

[Table of Contents](#) > [UDS Plus Home Page](#)

[<prev](#) | [bottom](#) | [next](#)

Uniform Data System (UDS) Patient Level Submission (PLS) - UDS+ IG - Local Development build (v0.1.0). See the [Directory of published versions](#)

1 UDS Plus Home Page

Official URL: <http://hrsa.gov/fhir/us/udsplus/ImplementationGuide/udsplus>

Version: 0.1.0

IG Standards status: [Trial-use](#)

Maturity Level: 1

Computable Name: UdsPlusFhirIg

Page standards status: [Informative](#)

1.1 Introduction

Each calendar year, HRSA Health Center Program awardees and look-alikes are required to report a core set of information, including data on patient characteristics, services provided, clinical processes and health outcomes, patients' use of services, staffing, costs, and revenues as part of a standardized reporting system known as the Uniform Data System (UDS). The UDS is a standard data set that is reported annually and provides consistent information about health centers. It is the source of non duplicated data for the entire scope of services included in the grant or designation for the calendar year. HRSA uses UDS data to assess the impact and performance of the Health Center Program, and to promote data-driven quality improvement. The current UDS data does not contain patient level information however through the UDS+ project HRSA intends to collect patient level de-identified data. This new patient level UDS report is called UDS+ report.

Contents:

- [Introduction](#)
- [Technical Overview](#)

This Implementation Guide (IG) defines the specifications by which Health Center Program awardees can report the UDS+ data to HRSA using

- De-identified Patient data using FHIR APIs
- De-identified Patient data using a File Upload option

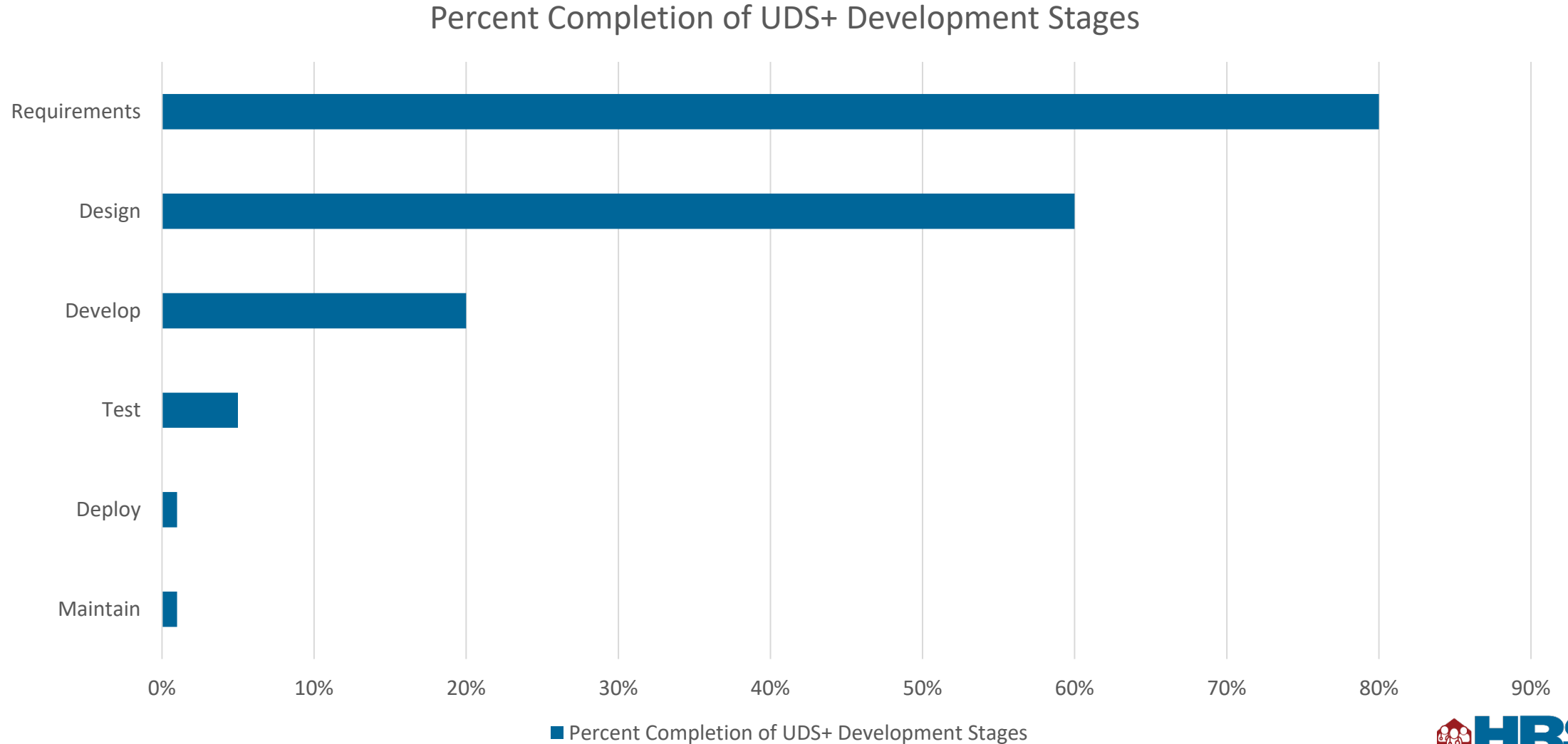


UDS Patient Level Submission (UDS+) Updates

Health Resources and Services Administration



HRSA Progress on UDS+ to Date



UDS+ Implementation Timeline

May 23, 2022: ARP-UDS+ Funding

ARP UDS+ supplemental funding opportunity is released to support health centers and look-a-likes build capacity for patient level reporting

Q4 2022: Synthetic Data Tests

UDS+ proof of concept with UDS Test Cooperative (UTC) using synthetic data

Q3 2023: Publication

Publish Final UDS+ FHIR Implementation Guide

September 2022: UDS+ Implementation Guide *(in progress)*

Draft UDS+ Implementation Guide available to UTC for input

Q2 2023: Pilot Testing

Iterative testing using health center data with UTC

February 15, 2024

Health centers submit patient-level data for CY 2023 UDS reporting using FHIR or manual file upload

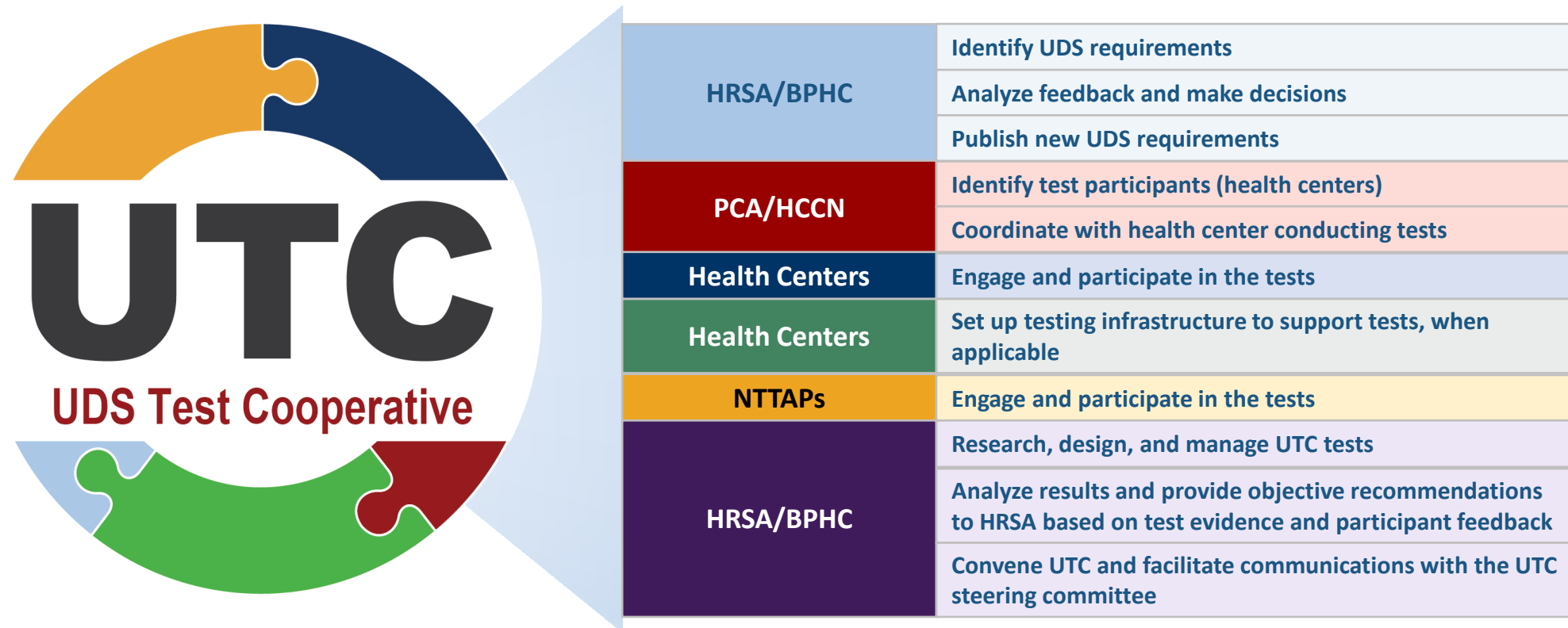


Draft UDS+ FHIR Implementation Guide

- FHIR Implementation Guide Definition
 - A FHIR implementation guide (IG) is a set of rules about how resources are used (or should be used) to solve a particular problem, with associated documentation to support and clarify the usage.
- The UDS+ Draft FHIR IG is currently being modified based on feedback provided during the readiness assessment; it will be publicly available once finalized.
- UTC Proof of Concept Participants will have access to draft versions and are actively providing input.
- The UDS+ FHIR IG will align with ONC and CMS regulations to the extent possible
 - Alignment will increase over time and as the ONC HRSA work progresses.

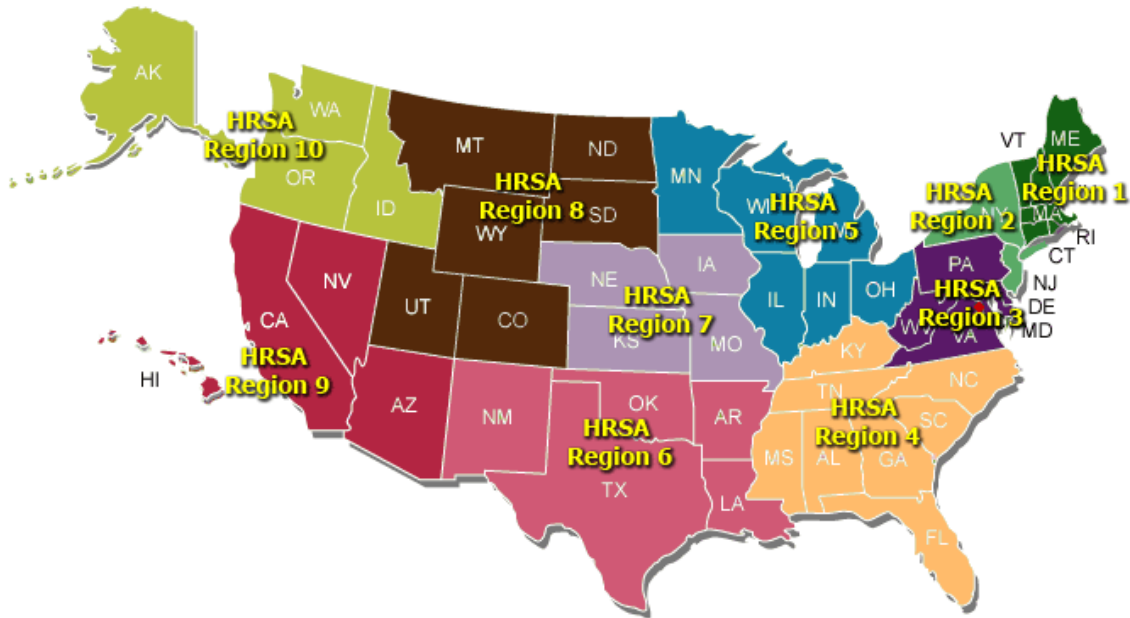
UDS Test Cooperative (UTC)

A forum for representative stakeholders to provide feedback on potential UDS changes.



To join the UTC, please communicate your interest to HRSA using the [BPHC Contact Form](#).

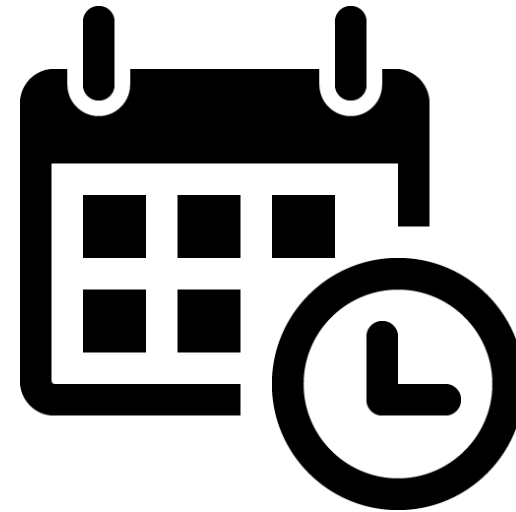
Steering Committee Selections



Region	Organization Type	Organization
1	HCCN	Ohio Shared Information Services, Inc.
2	Health Center	Open Door Family Medical Center
3	Health Center	Delaware Valley Community Health, Inc.
4	Health Center	Coastal Family Health Center
5	HCCN	Alliance Chicago
6	Health Center	Presbyterian Medical Services Health Center
7	PCA	Center for Health Care Quality
8	HCCN	Colorado Community Managed Care
9	HCCN	Oregon Community Health Information Network
10	Health Center	Tanana Chiefs Conference

UTC Expected Timeline Commitment for UDS+ PoC

- UTC participation is expected to span from June 2022 to April 2023 (approximately 11 months)
- UTC members will attend meetings at least once per month, but the time commitment will vary
- Participants selected to conduct approximately 1-2 tests per year



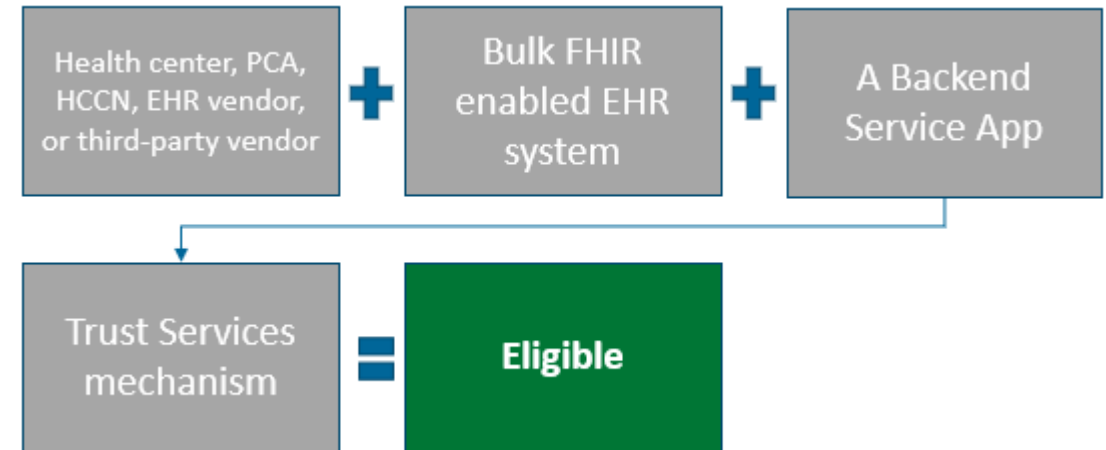
UTC Eligibility for UDS+ PoC

Eligible Stakeholders:

- Health centers, Primary Care Associations (PCAs), Health Center Controlled Networks (HCCNs), EHR vendors, third party vendors

Technology Required:

- Bulk-FHIR enabled EHR system
- A Backend Service App (BSA)
- Trust Services mechanism
- Be able to generate or download and utilize synthetic data (file can be provided)



Knowledge Check 4

True or False: The first tests for the UDS Test Cooperative (UTC) will involve *synthetic* data.

- ✓ True. The Proof of Concept (PoC) testing will assess and evaluate IT infrastructure (i.e., servers, bandwidth, capacity) and data flows. If synthetic data is not readily available at your health center, a file is planned to be made available to download and send.

UTC Meeting Calendar

- Thursday, November 10, 2022, 1:00 – 2:00 pm ET
- Friday, December 9, 2022, 2:00 – 3:00 pm ET

Knowledge Check 5

True or False: Health centers, Primary Care Associations, Health Center Controlled Networks, and EHR vendors can join the UDS Test Cooperative (UTC).

- ✓ True. Any interested stakeholder can be a part of the UTC. This includes PCAs, HCCNs, health centers, and EHR Vendors. Sign-up through the [BPHC Contact Form](https://hrsa.force.com/support) (*hrsa.force.com/support*)

Participant Q&A



Resources

To support your transition to patient level reporting, please take advantage of the following resources:

HRSA Webpages:

- [UDS Modernization](#)
- [UDS FAQs](#)
- [UTC](#)
- [Primary Care Digest](#)

Thank You!

Office of Quality Improvement (OQI)

Bureau of Primary Health Care (BPHC)

Health Resources and Services Administration (HRSA)

Send inquiries via the [BPHC Contact Form](#) (*select UDS Modernization*).

bphc.hrsa.gov



[Sign up for the *Primary Health Care Digest*](#)



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NACHC is on FHIR: How We Implemented FHIR-based Standards for Health Data

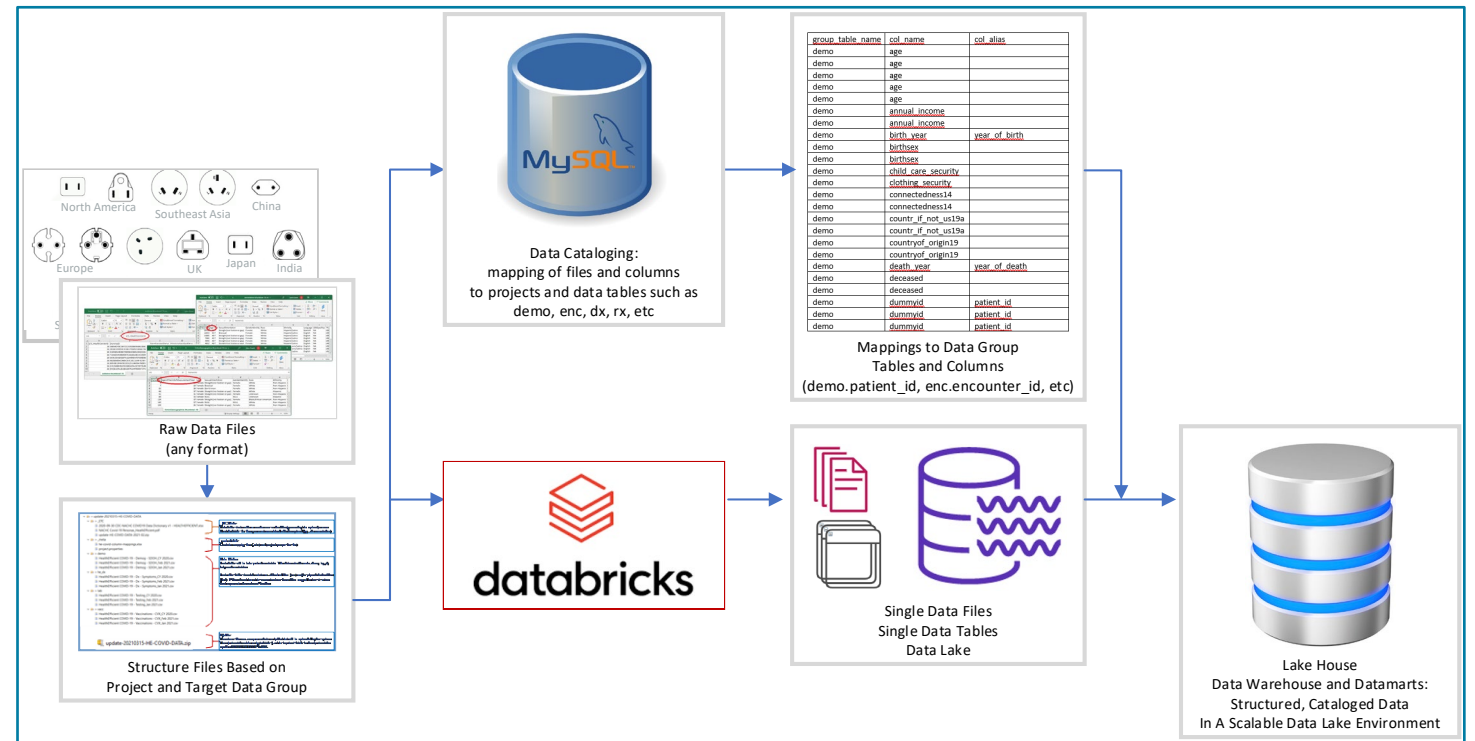
John Gresh, MS
Chief Architect/Software Engineer
NACHC



NACHC's Master Data Management Strategy

Use of FHIR and OHDSI/OMOP to completely automate and streamline data exchange

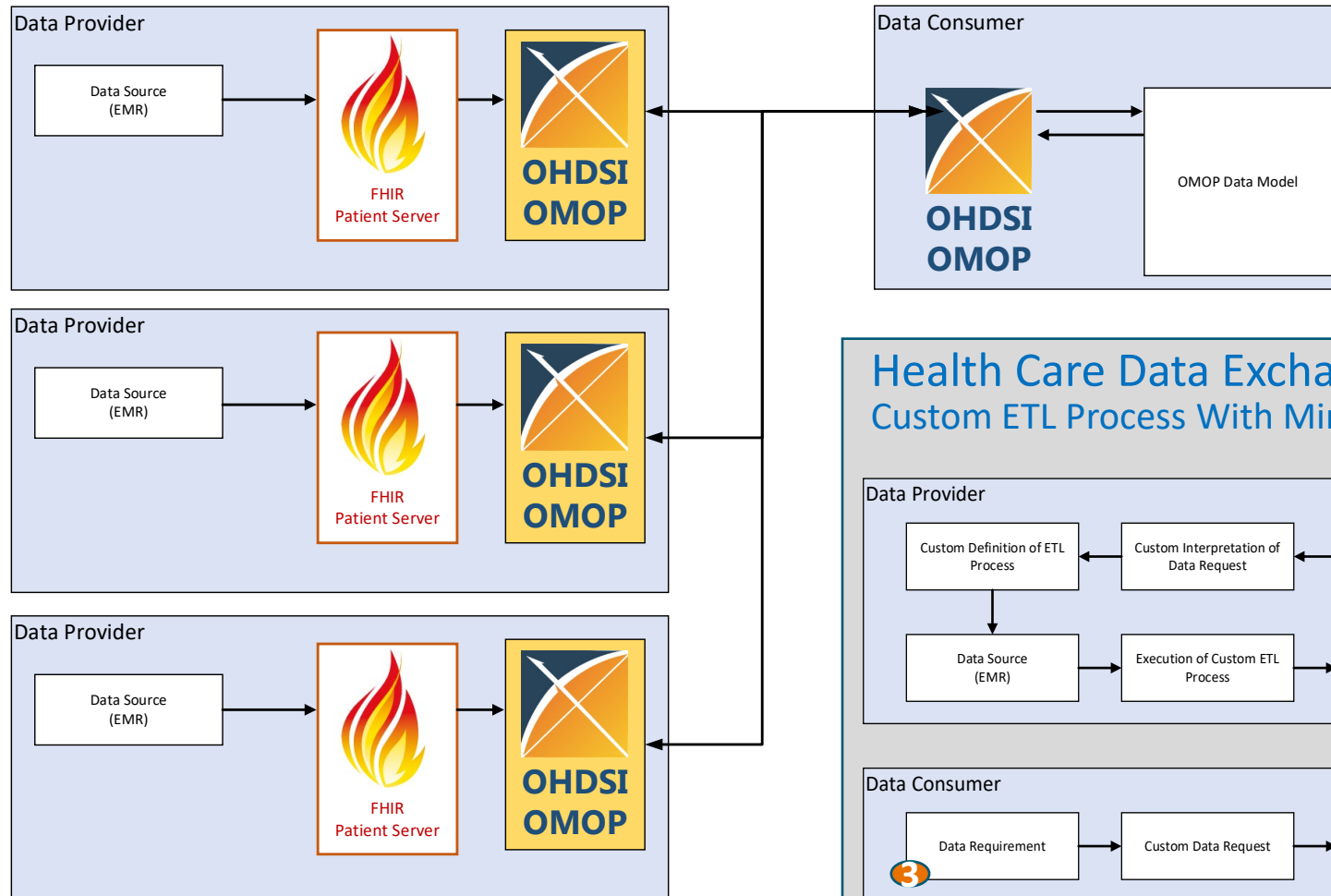
Current State NACHC Architecture



Opportunity: A Wealth of Information and a Plethora of Formats

- **Manage and Leverage the Current State**
 - Develop expertise and efficiency in using the data available as it is today
 - We have a highly scalable and agile solution for the use and management of highly complex data and an amazing and diverse team of clinicians, engineers, and scientists
- **Be the Architects of the Future State**
 - Develop common reproducible solutions for the data available today
 - Drive partners and collaborators towards common reproducible solutions
 - Contribute and collaborate with the community to develop tools, techniques, standards, etc. to manage the data available today
 - Participate in the community to drive towards the effective implementation and use of standards that are modernizing interoperability (FHIR, OMOP, Terminologies, etc.)

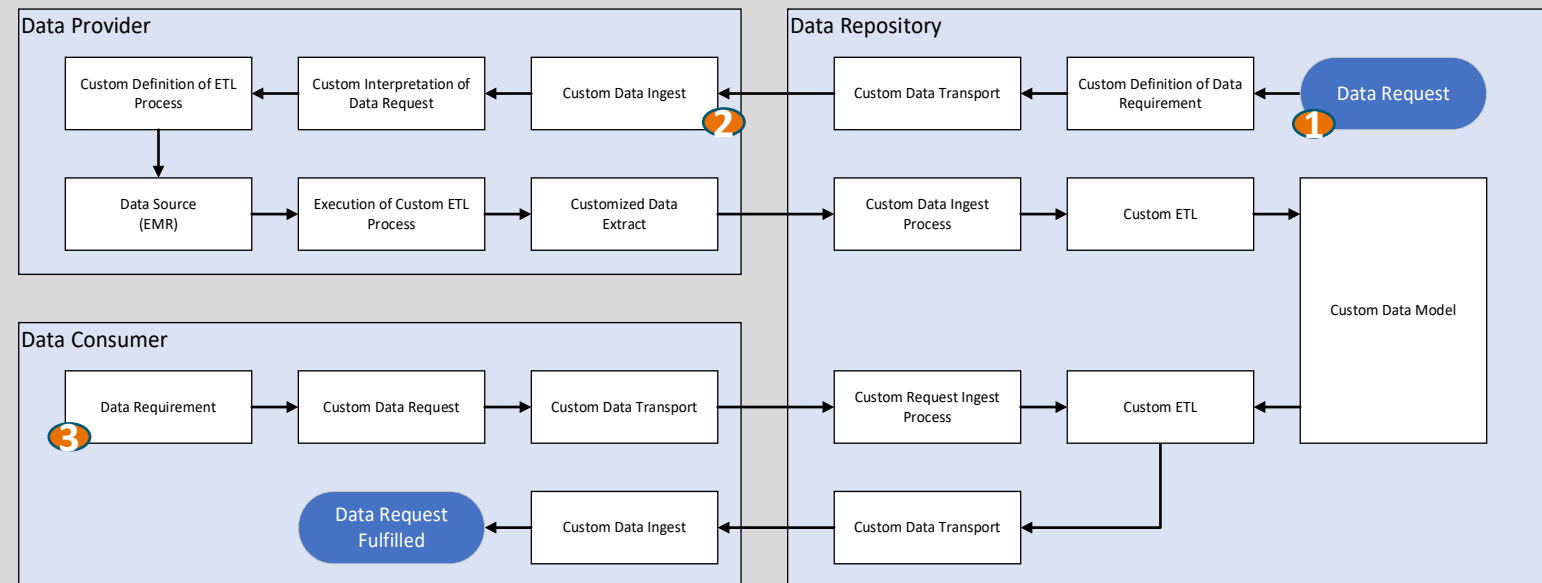
Future State With FHIR and OHDSI OMOP



For each data request

- All ETL processes are encapsulated in the FHIR to OMOP conversion

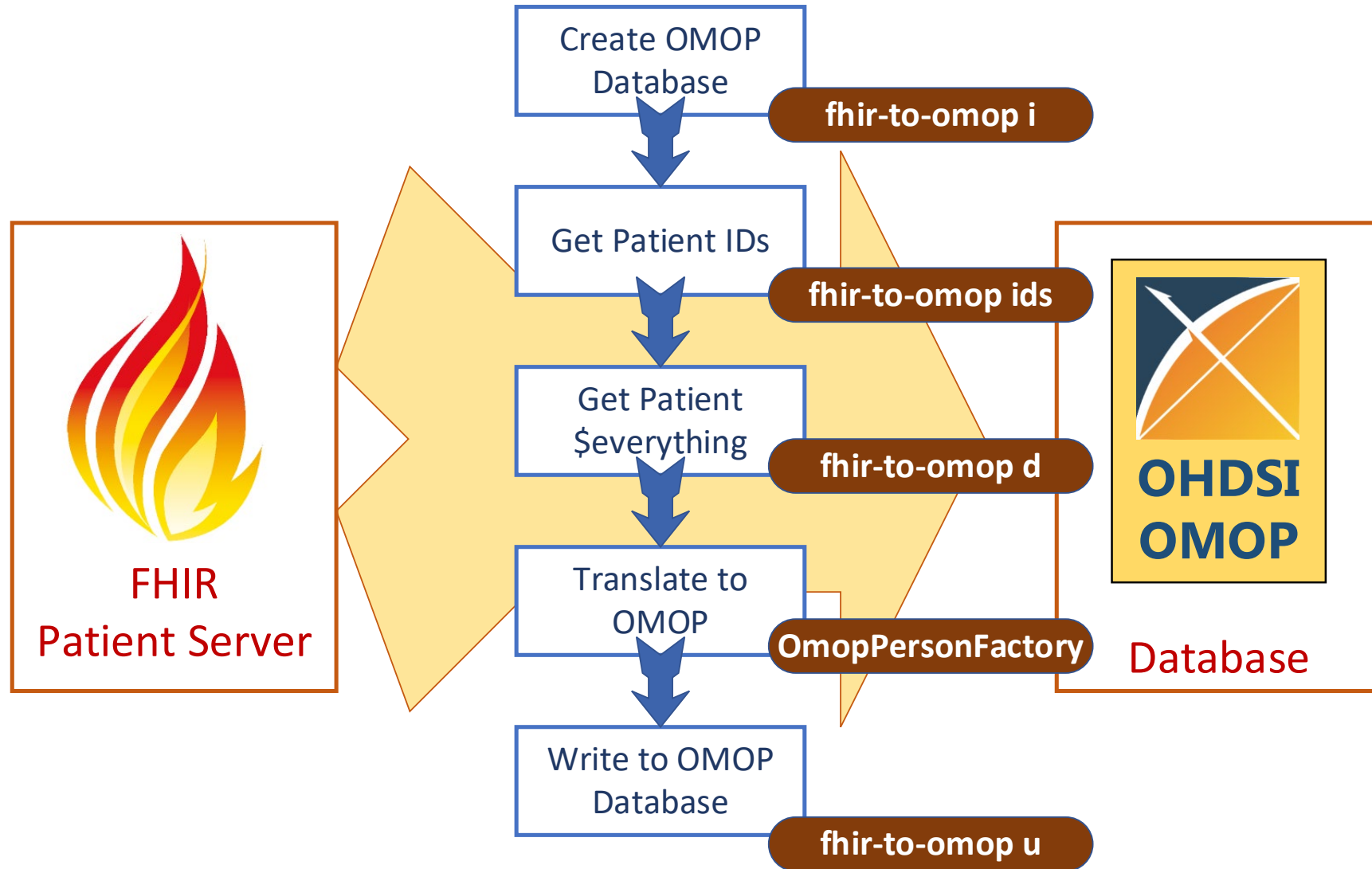
Health Care Data Exchange Current State: Custom ETL Process With Minimal Reuse



1. The data consumer creates a custom data request and forwards it to the data provider. The data provider creates a custom ETL process to extract the data from their data repository.
2. The data repository executes the custom ETL process and forwards the data to the data consumer. The data repository creates a custom ETL process to ingest the data.
3. A consumer of the data repository creates a request that is in a format specific to the repository. The repository maintains a custom ETL process to fulfill the request.

NACHC fhir-to-omop

<https://nachc-cad.github.io/fhir-to-omop/index.html>

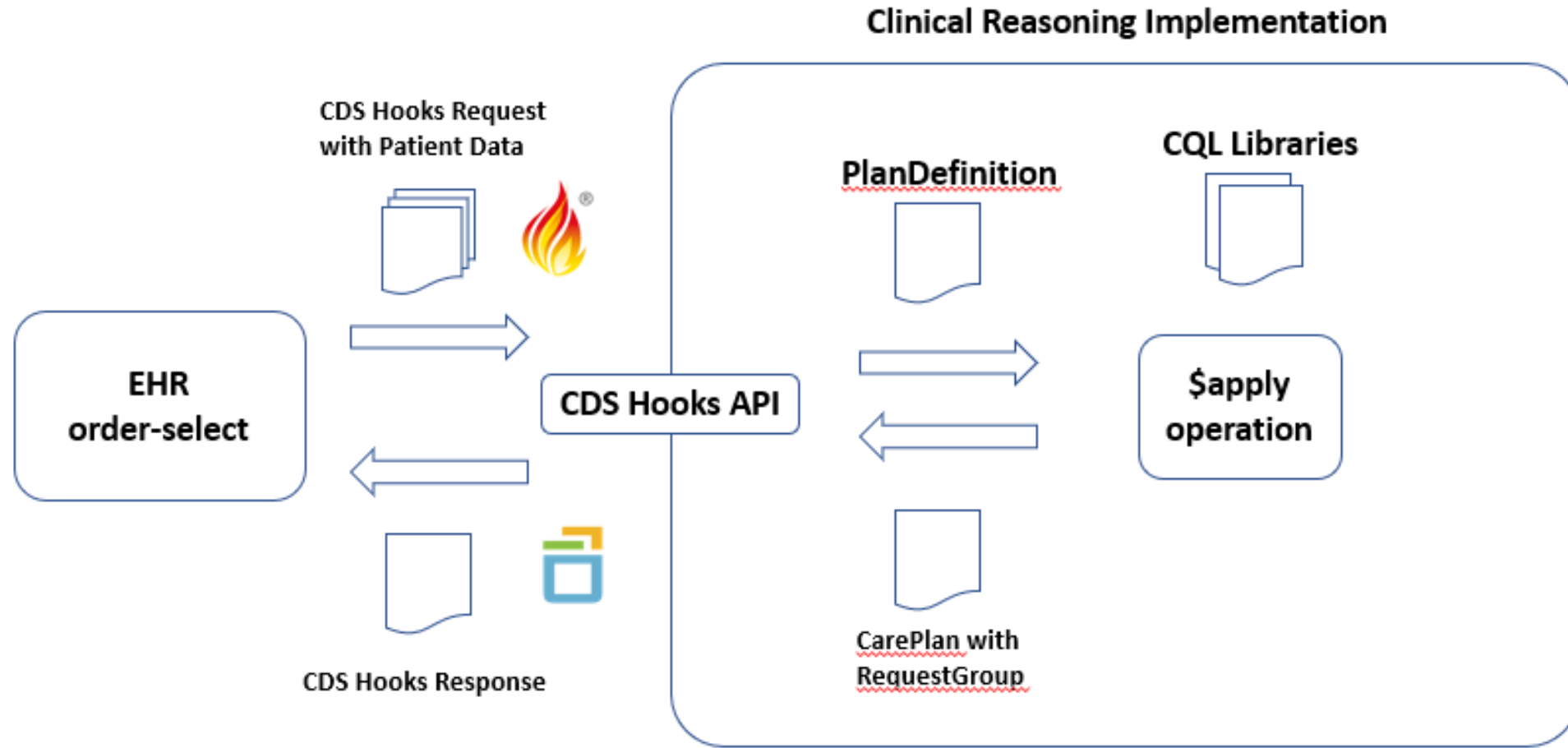


Accomplishments so far

- **Component based architecture:** Tools can be used out of the box and custom implementations can be created by using individual components
- Extensive testing including integration and unit testing using JUnit as well as integration with OHDSI Data Quality Dashboard (DQD), Achilles, Atlas, and other OHDSI tools
- Implementation of solution for FHIR system to OMOP vocabulary_id
- Implementation of solution for FHIR to OMOP race/ethnicity mappings
- Implementation of **solution for download of Patient/[id]/\$everything resources** including solution for paged resources
- **Implementation of advanced threading model**
- Testing and validation tools can be extended to not only validate our system but to **validate FHIR patient data sources** as well as other FHIR to OMOP implementations
- Using SyntheticMass as a representative data provider
- Solved issues of scalability:
 - Download rates of approximately 1 million patients in 24 hours (limited by FHIR server source)
 - **Parse and upload rates of approximately 1.5 million patients in 2 hours** (~100 patients per second)
- Automation of installation of **OMOP Common Data Model database and OHDSI tools including Achilles and Atlas**

SMART on FHIR Architecture: Write once and reuse

from: <https://build.fhir.org/ig/cqframework/hiv-cds/architecture.html>



NACHC SMART on FHIR Questionnaire and Clinical Decision Support: CDC guidelines for HIV testing

The screenshot displays a web browser window with the SMART App Launcher interface. The browser's address bar shows the URL: `https://launch.smarthealthit.org/ehr.html?app=http%3A%2F%2Flocalhost%3A8080%2Fforms-examples%2Fpages%2Fquestionnaire%2Fhiv-cds%2F...`. The browser's bookmark bar includes links to "OHDSI2021 Day 2 P...", "Linked Issues", "Creality3D Ender-3...", "John's Confluence...", "Jira -- NSSI", "Sprint Board - Agile...", "HL7 FHIR API | Synt...", and "COSMOS".

The application header shows "Simulated EHR" with a patient profile: "Patient: Mr. Geoffrey Abbott, age: 30 years, sex: Male" and a user profile: "User: Dr. Albertine Orn".

The main content area is titled "CDS HIV Questionnaire". It features a vertical "EHR Sidebar" on the left. The questionnaire is organized into sections, each with a blue header bar:

- NACHC.A0 Contact & Profile**
 - The type of patient encounter (Select one)
 - Concepts Associated with Sexual Orientation Elements (Select one)
 - Concepts Associated with Gender Identity Elements (Select one)
- NACHC.A1 HIV**
 - Concepts Associated with HIV Diagnosis (Select one)
- NACHC.A2 HIV test**
 - Concepts Associated with HIV Testing (Select one)
 - Concepts Associated with Ordering an HIV Test (Select one)
- NACHC.B1 HCV**
 - Concepts Associated with HCV Diagnosis (Select one)

The bottom of the interface features an "EHR Status bar" with the following information: Patient ID: 2cda5aad-e409-4070-9a15-e1c35c46ed5a, User ID: 52919099-6a7a-442c-b0d5-2b02c0dd4b74, and Encounter ID: 1e38b771-ea87-4343-a5a8-60022374cbaa.

Next Steps

- Ongoing extension to our implementation of the FHIR-to-OMOP data that includes only the resources we needed for our current efforts. Mapping of additional resources and refinements of the mappings will continue.
- Integration of existing and other FHIR to OMOP mappings: The FHIR-to-OMOP project contains a suite of resources that enable scalability including a threading model that allows for very rapid uploads and extensive JUnit testing. These tools can be applied to other implementations of FHIR to OMOP mapping.
- Working with HL7 Connectathons, in standards development and finding other testing partners and content
- Evaluating and testing the UDS+ IG internally with SyntheticMass
- Building new and updating existing SMART on FHIR applications for use by health center partners

Useful Resources towards FHIR-enabled Data Architecture

- Specific FHIR Implementation Guides (IGs) such as the one for the hiv-cds project at <https://build.fhir.org/ig/cqframework/hiv-cds/index.html>
- HL7 Connectathons and Dev Days
 - A great opportunity to meet and work directly with the top people working in FHIR
 - <https://www.devdays.com/>
 - <https://www.hl7.org/events/fhir-connectathon/>
- OHDSI/OMOP Web pages and meetings
 - <https://ohdsi.org/>
 - The OHDSI Community holds regular working group and general interest meetings
 - <https://ohdsi.org/this-week-in-ohdsi/>
 - <https://www.ohdsi.org/ohdsi-community-calls-2021/>
 - Sign up for OHDSI Workgroups:
https://forms.office.com/Pages/ResponsePage.aspx?id=IAAPoyCRq0q6TOVQkCOy1ZyG6Ud_r2tKuS0HcGnqiQZUOVJFUzBFWWE1aSVILN0ozR01MUVQ4T0RGNyQlQCN0PWcu

How to Achieve FHIR and UDS+ Readiness

- Join the UTC!
- Designate team members to evaluate UDS+ Readiness
- Contact your vendor to take advantage of coming capabilities and tools
- Attend or join HL7 meetings
- Consider participating in FHIR Connectathons
- Create a UDS Mapping Plan
- Create a UDS Testing Plan
- Join NACHC-lead and other UDS+ and FHIR community events
 - Informatics@nachc.com or jskapik@nachc.com

IMPACT/LESSONS LEARNED

30%

Learn about the development and deployment of the UDS+



Consider the opportunity to become involved early in UDS+ testing and feedback



Create a plan for your organization to move towards UDS+



THANK YOU!

jskapik@nachc.com or
informatics@nachc.com



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Appendix



Data Table – Percent Completion of UDS+ Development Stages

UDS+ Development Stages	Percent Completion of UDS+ Development Stages
Maintain	1%
Deploy	1%
Test	5%
Develop	20%
Design	60%
Requirements	80%