

# *Medication Reconciliation Hackathon*

## **Implementing FHIR**



# John DeStefano, MBA RPh

Director of Innovation and Health Information Exchange

SMC Partners, LLC

<https://smcpartners.com/>

## What we'll talk about:

- 1.FHIR Use Cases
- 2.Specific Implementation Experiences
- 3.The SMART Part (EHR Launch)



# FHIR Use Case: Personal Health Record

Description: The patient can access their medical information through a RESTful API usually provided by a third party.

## Flow:

- Provides the patient with a login that identifies them (or links the patient record to an external identity provided by OpenID, Facebook, Google, etc.)
- Authenticates the client using an appropriate OAuth server for the login (possibly their own) and restricts the client to viewing records associated with the specific patient (or patients, where appropriate access has been arranged)



# FHIR Use Case: Personal Health Record

## Examples:



### **Blue Button**

(<https://www.healthit.gov/topic/health-it-initiatives/blue-button>)

“This data reveals a variety of information about a beneficiary’s health, including type of Medicare coverage, drug prescriptions, primary care treatment and cost. Beneficiaries also have full control over how their data can be used and by whom, with identity and authorization controlled by MyMedicare.gov.

Blue Button 2.0 uses the [HL7 FHIR standard](#) for beneficiary data and the [OAuth 2.0 standard](#) for beneficiary authorization.”



# FHIR Use Case: Personal Health Record

## Examples:

### **Apple Health Records**

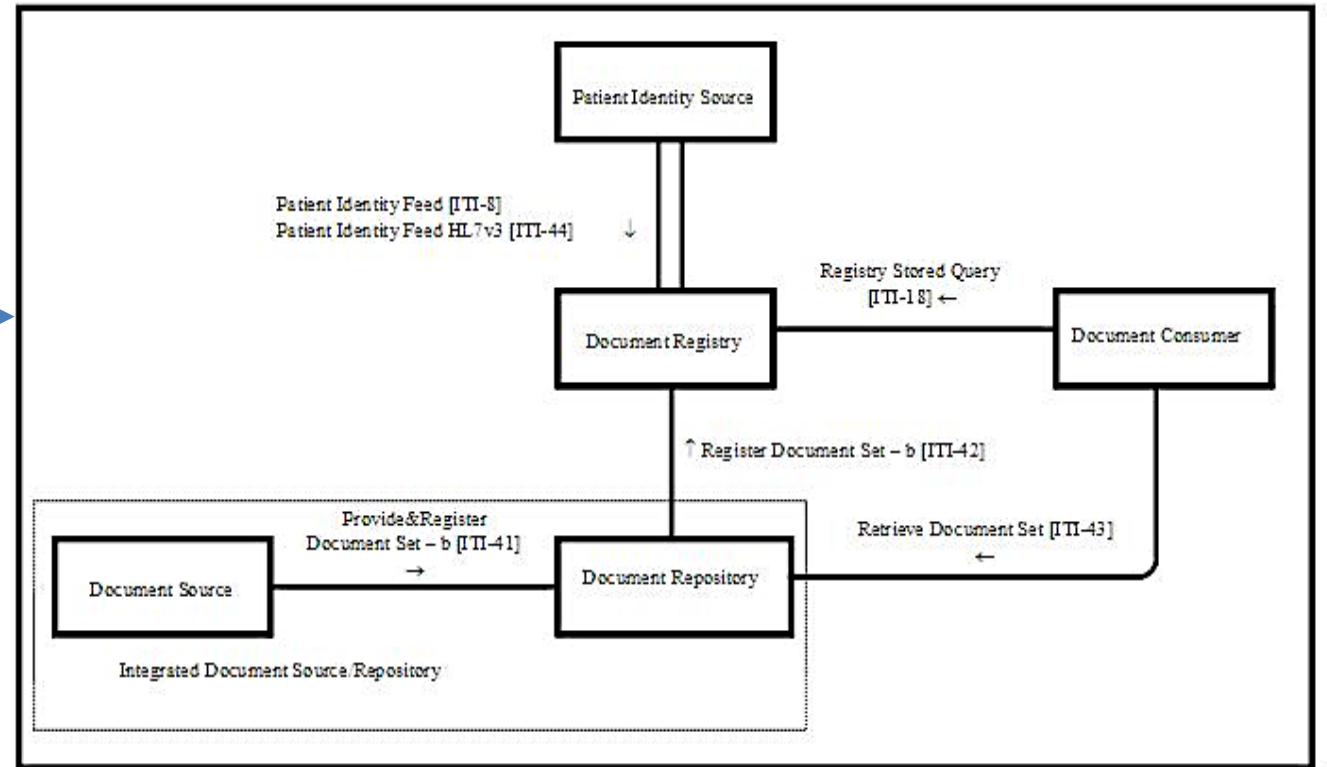
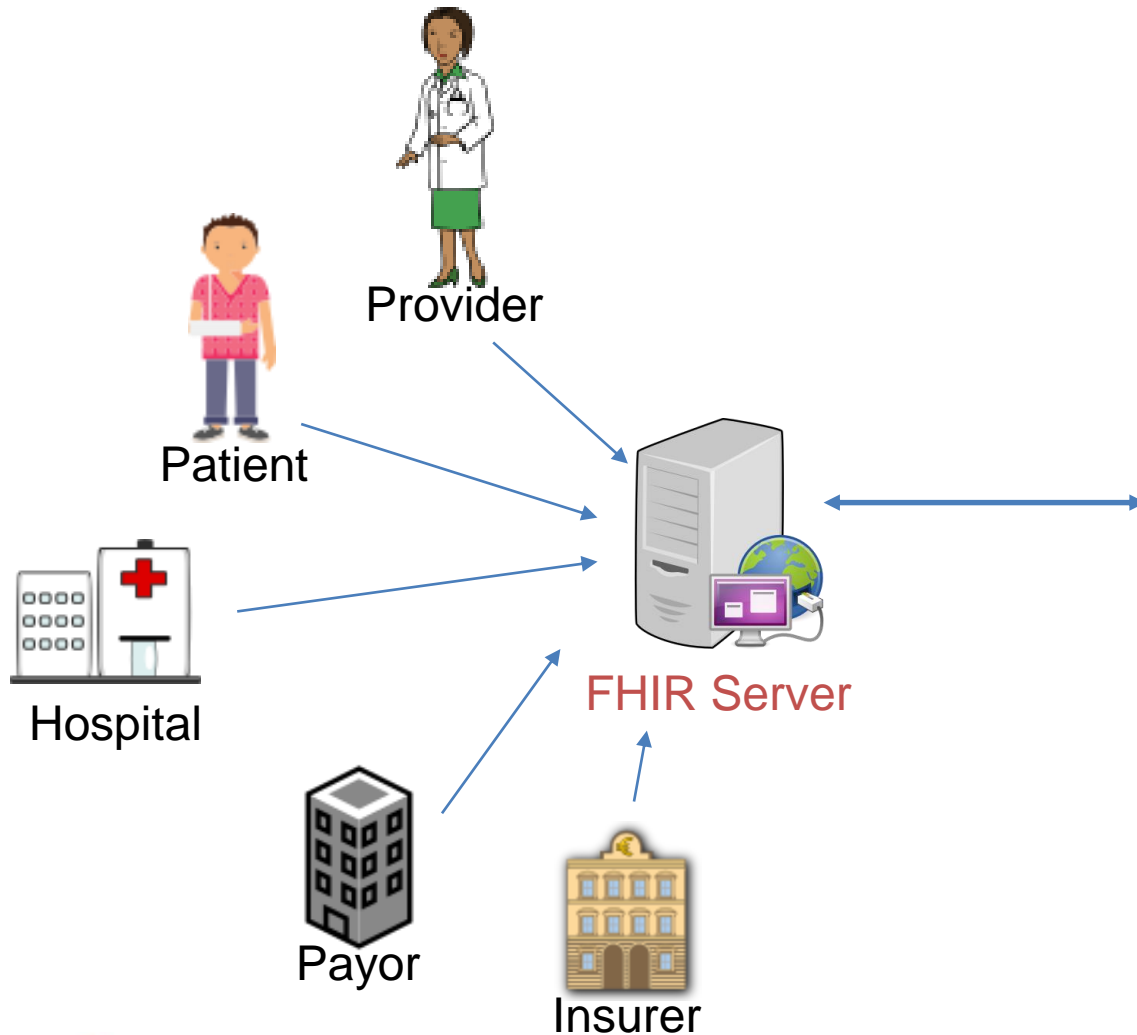
(<https://www.apple.com/healthcare/health-records/>)

“The Health app makes it easier than ever for users to visualize and securely store their health records. Now your patients can aggregate their health records from multiple institutions alongside their patient-generated data, creating a more holistic view of their health.”

# FHIR Use Case: Document Sharing

IHE – Integrating the Healthcare Enterprise

<https://www.ihe.net/>



[https://wiki.ihe.net/index.php/Cross-Enterprise\\_Document\\_Sharing](https://wiki.ihe.net/index.php/Cross-Enterprise_Document_Sharing)

# FHIR Use Case: Document Sharing

## Example Provider Use Case for Document Sharing



I'm looking at my patient's chart in my EHR. I have a widget that is really a FHIR app and can connect to a local HIE so I can get a community view of my patient's medical information.



# FHIR Use Case: Document Sharing

## Example Person Use for Document Sharing

I'm at my doctor's office and she asks me a question about a medication I'm taking. It doesn't sound familiar so I access the myCTHealth app to look it up. The app provides access to my data from around the state through a FHIR based resource server. Some of the data comes from source systems that can only provide Continuity of Care Documents (CCD), which my app transforms so they are easily understandable on my phone. My provider asks me if I would mind sharing the data so I select my provider from the list in the app and hit the send button. This sends the CCD to my provider's EHR.



## The Da Vinci Project Use Cases

### **1. Data Exchange for Quality Measures (DEQM): Medication Reconciliation Post-Discharge (MRP)**

Payers and providers need common transport tools to share the data required to complete medication reconciliation at all transitions of care.

### **2. Coverage Requirements Discovery (CRD)**

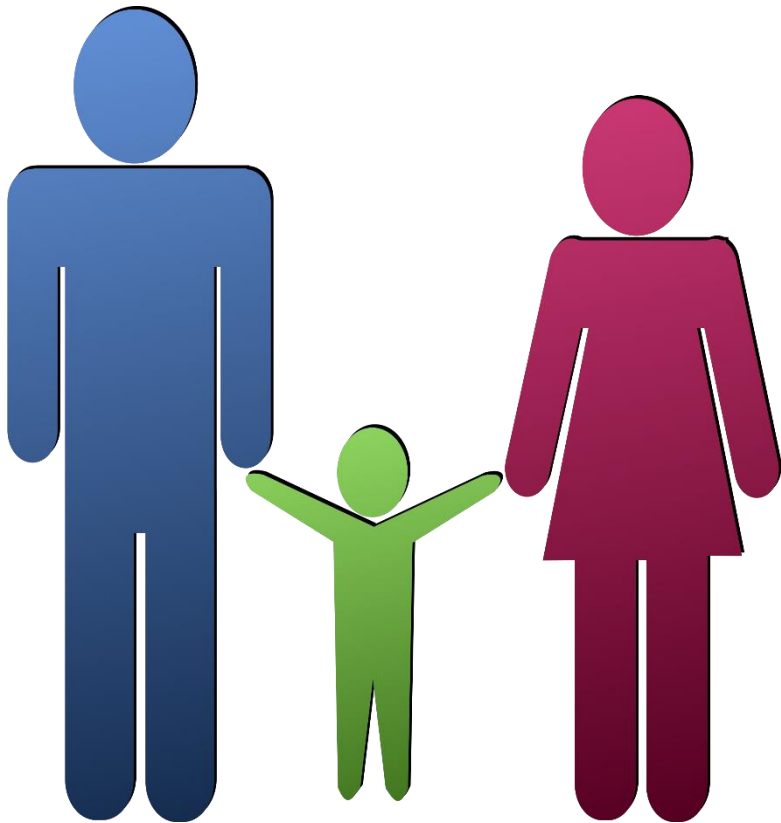
Providers need to easily discover which payer covered services or devices have:

- Specific documentation requirements
- Rules for determining need for specific treatments/services
- Requirement for Prior Authorization (PA) or other approvals
- Specific guidance

### **3. eHealth Record Exchange: Clinical Data Exchange (CDex)**

Providers and Payers need to exchange information regarding prior and current healthcare services planned for or received by the patient/member to more effectively manage the patients care.

# FHIR Use Case: Insurance Coverage



I need to get life insurance to protect my growing family. My insurance agent asks me to sign a medical release so he can get my medical data electronically to provide the best policy rate. Behind the scenes the insurer uses various Health Care APIs to connect to EHRs that provide a life insurance use case.

# FHIR Use Case: Clinical Decision Support (CDS)

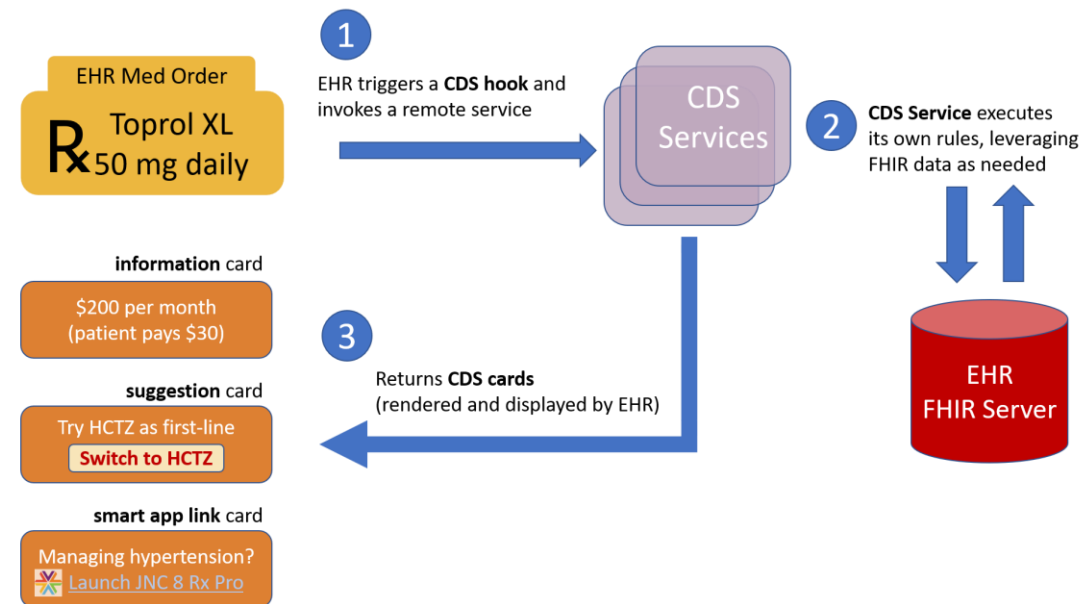
## CDS Hooks

A "[hook](#)"-based pattern for invoking decision support from within a clinician's workflow. The API supports:

- Synchronous, workflow-triggered CDS calls returning information and suggestions
- Launching a user-facing SMART app when CDS requires additional interaction

*Still in active development* (<https://cds-hooks.org/>)

## Propose Workflow





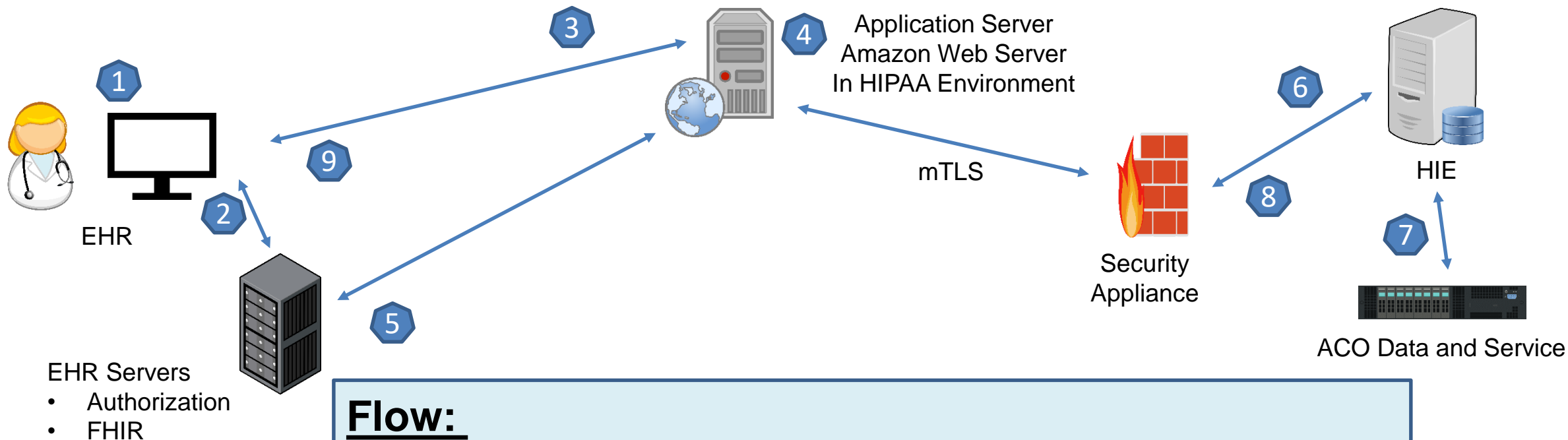
# Real World FHIR Implementation

## Patient Care Tracker

### High Level Requirements for Care Provider:

- Identify if a patient is a member of the BeHealthy ACO.
- Identify if my patient has completed their Care Needs Screening (ACO requirement).
- Show all the providers who have worked with my patient in the last few years.
- Provide contact information for providers.
- View my patient's most recent clinical engagements from the HIE and provide some detail about the nature of the engagement.
- See patient demographic information.
- Present the above information in my normal EHR workflow.

# Real World FHIR Implementation



## Flow:

1. Public FHIR Client launch by EHR
2. JS client coordinates authentication with EHR authentication server
3. JS client calls application server to request patient data
4. App server checks token against security criteria
5. App server calls EHR FHIR server (passing token) for Patient Resource
6. App Server calls HIE service for aggregated patient community data
7. HIE Service calls ACO service for ACO specific data
8. HIE service returns HIE and ACO data to Application Server
9. Application server formats data and returns to JS client

# Real World FHIR Implementation

## Tracking Screen

The screenshot displays a medical tracking interface within a Citrix Viewer. The main window shows patient information for PVCENTRICITY, MILDRED, including age (50 years), DOB (6/14/1968), gender (Female), and location (ICU: ICUX7; A). The interface includes a menu on the left with options like 'MyPage - Ambulatory Workflow', 'Future Orders', and 'Overview'. The main content area shows a 'Patient Care Tracker' with a timeline view. A pop-up window titled 'Outpatient Event Details' is open, displaying the following information:

- Visit Description:** No Data
- Admit Reason:** TESTING PORTAL
- Admission Type:** ROUTINE
- Admitting Provider:** ABDELKADER MD, KHALED
- Referring Provider:** No Data
- Attending Provider(s):** ABDELKADER MD, KHALED
- Consulting Provider(s):** No Data
- Organization:** PLMRPRIMW
- Organization Phone Number:** No Data
- Entered At:** Baystate
- Entered At Phone Number:** No Data

The bottom of the screen shows a taskbar with various application icons and a system tray indicating the date and time as March 31, 2019, 10:10 EDT.

# Real World FHIR Implementation

Citrix Viewer View Devices

PVCENTRICITY, MILDRED - 2058024 Opened by Olsson, Jesse

Task Edit View Patient Chart Links Navigation Help

InBox Patient Lists New Sticky Note View Sticky Notes Tear Off Change Web Paging eWorkplace WebMD Medication Calculator HNAUser DCP Tools Pharmacy Batch Reports

PVCENTRICITY, MILDRED

PVCENTRICITY, MILDRED  
PCP:Futrell MD, Tara D  
Allergies: Apple Juice

Age:50 years  
myHealth: N

DOB:6/14/1968  
MRN:2058024

Gender:Female  
Acct#: 149615709  
Dry Weight:103 kg

Loc:ICU; ICUX7: A  
Inpatient[4/19/2018 13:22 - <No - Discharge ...

Menu

- MyPage - Inpatient Workflow
- MyPage - Ambulatory Workflow
- Future Orders
- Overview
- MyPage - Quick Order View
- Diagnosis and Problems
- Enter Charges (PK)
- Health Maintenance
- Immunizations Schedule
- Historical Immunization
- All Results
- Micro
- Allergies + Add
- Histories
- Growth Charts
- Orders + Add
- Medication List + Add
- MAR
- MAR Summary
- Interactive Flowsheets
- Documentation + Add

MyPage - Ambulatory Workflow

Primary Care AMB WF

Patient Care Tracker

Timeline Treating Providers BeHealthy ACO

Name: PVCENTRICITY, MILDRED FHIR ID: 24373048

Provider Name	Organization	Role	Email	Work Phone
BAQUIS, GEORGE D	BMA NEURO	Attending		
TORRES, ORLANDO L	BMC	Attending		
MARTINEZ DO, OSCAR	MLH OB GYN	Attending		
ACQUISTA MD, ANTHONY	PLMRPRIMW	Attending		
BOSS MD, EUGENE	NORTH EDGE	Attending		
PUNDLA MD, KALYAN	WESTSIDE	Attending		
COSSIN, JEFFREY R	BMC	Attending		
MORRIS MD, MARVIN	BAYVASSVCB	Attending		
BHATT, RITIKA	BMC	Attending		
SMITH, DANIEL C	WMH	Attending		
BALY MD, JOUN	GRN EMCUBO	Attending		

C627 CN74592 March 31, 2019 10:10 EDT

Treating  
Providers



# Real World FHIR Implementation

Citrix Viewer View Devices

PVCENTRICITY, MILDRED - 2058024 Opened by Olsson, Jesse

Task Edit View Patient Chart Links Navigation Help

InBox Patient Lists New Sticky Note View Sticky Notes Tear Off Change Web Paging eWorkplace WebMD Medication Calculator HNAUser DCP Tools Pharmacy Batch Reports

PVCENTRICITY, MILDRED

PVCENTRICITY, MILDRED  
PCP:Futrell MD, Tara D  
Allergies: Apple Juice

Age:50 years  
myHealth: N

DOB:6/14/1968  
MRN:2058024

Gender:Female  
Acct#: 149615709  
Dry Weight:103 kg

Loc:ICU: ICUX7; A  
Inpatient[4/19/2018 13:22 - <No - Discharge ...

Menu

MyPage - Inpatient Workflow

MyPage - Ambulatory Workflow

Future Orders

Overview

MyPage - Quick Order View

Diagnosis and Problems

Enter Charges (PK)

Health Maintenance

Immunizations Schedule

Historical Immunization

All Results

Micro

Allergies + Add

Histories

Growth Charts

Orders + Add

Medication List + Add

MAR

MAR Summary

Interactive Flowsheets

Documentation + Add

MyPage - Ambulatory Workflow

Primary Care AMB WF

Patient Care Tracker

Timeline Treating Providers BeHealthy ACO

Name: PVCENTRICITY, MILDRED FHIR ID: 24373048

BeHealthy Member?	Yes
Community Partner	Caring Health
Care Needs Screening Status	Started on 3/23/2019
Care Coordinator	Olsson, Jesse Details

Only a small subset of the ACO population, identified as high risk, have assigned Community Partners or Care Coordinators.

Survey Question	Answer
Employment Status	Unable to Work
Education Level	Bachelor's Degree
Housing Situation	Has Housing Today, but Worried about Losing Tomorrow
Worried about Utilities (electric, gas, oil)	Already Shut Off
Transportation Difficult	Yes
Worried About Food	Never True

The above information comes from a subset of survey answers in the Home and Environment section of the BeHealthy Care Needs

C627 CN74592 March 31, 2019 10:10 EDT

ACO DATA

## What Is SMART?

### SMART—An App Platform for Healthcare

“SMART Health IT is an open, standards based technology platform that enables innovators to create apps that seamlessly and securely run across the healthcare system. Using an electronic health record (EHR) system or data warehouse that supports the SMART standard, patients, doctors, and healthcare practitioners can draw on this library of apps to improve clinical care, research, and public health.”

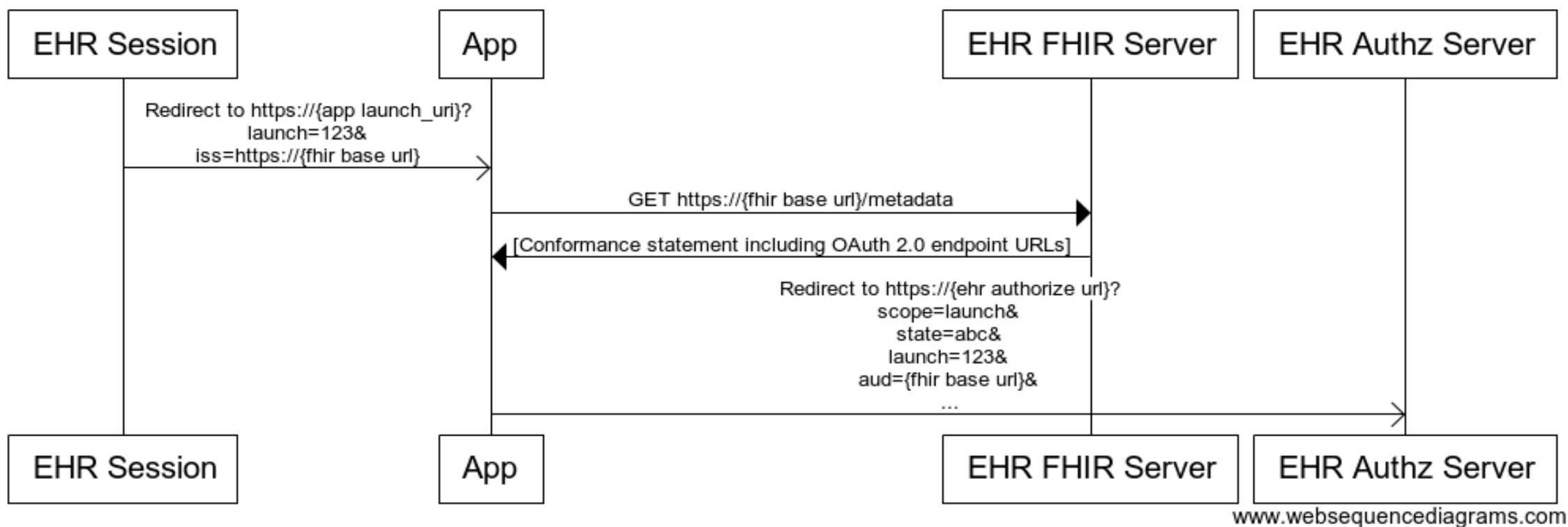
(<https://smarthealthit.org/an-app-platform-for-healthcare/about/>)

## What Is SMART?

SMART standards outline a robust authorization model for apps based on the OAuth standard, providing a key component that enables innovation while keeping patients and providers in control of their data.

(<https://smarthealthit.org/an-app-platform-for-healthcare/about/>)

# The SMART Part



(<http://hl7.org/fhir/smart-app-launch/>)

## Demo SMART Server Orchestrated Public Client Launch

