

The Promise and Possibilities of SMART on FHIR & CDS Hooks

Rick Freeman

CEO



INTEROPION

September 24, 2018



INTEROPION

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We have proven implementations at premier healthcare systems — both customized solutions and ready-made applications — leveraging our leading expertise in EHR systems, new data standards and protocols, APIs, and programming languages.



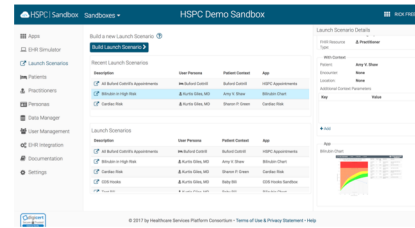
SMART on FHIR & CDS Hooks Portfolio



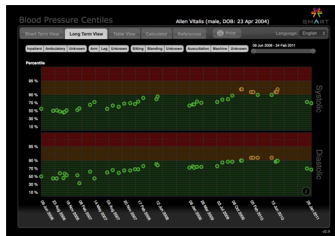
SMART Growth Chart



Bilirubin Risk Chart



HSPC Sandbox



BP Centiles

The Duke PillBox interface is a medication management tool. It includes a table of 'Medication' with columns for Medication, Interval, and Quantity. Below the table, there are sections for 'Add Medications' and 'Launch Pillbox Exercise'. The interface is designed for healthcare providers to manage patient medications.

Duke PillBox



Pediatric Suite



Risk Calculators

The SMART Consent Forms interface displays a patient consent form. It includes a 'Patient Data' section with input fields for patient information. Below this, there are sections for 'Patient Measurements' and 'Patient Data' with various input fields and checkboxes. The interface is designed for healthcare providers to obtain patient consent.

SMART Consent Forms

Interopion: The leader in SMART on FHIR & CDS Hooks

- CTO is one of the inventors of the SMART on FHIR and CDS Hooks technologies
- Integral in effort to introduce SMART to HIT community at HIMSS 2014
- Built the SMART on FHIR Reference Implementation
- Built first SMART on FHIR Apps, first to take SMART Apps to production
- Longstanding relationships with all major EHR vendors around SMART on FHIR technology

What is SMART on FHIR, CDS Hooks, and why it matters to you.

SMART on FHIR

Addresses 2 Big Problems



Clinical Data Locked in Proprietary EHRs

- No access to discrete data
- No common data structure



Clinical Knowledge Shared as PDFs or in Medical Journals

- Not executable
- Not workflow integrated

Bilirubin Risk Management: Pre-SMART on FHIR

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation

Pediatrics 2004;114:297
DOI: 10.1542/peds.114.1.297

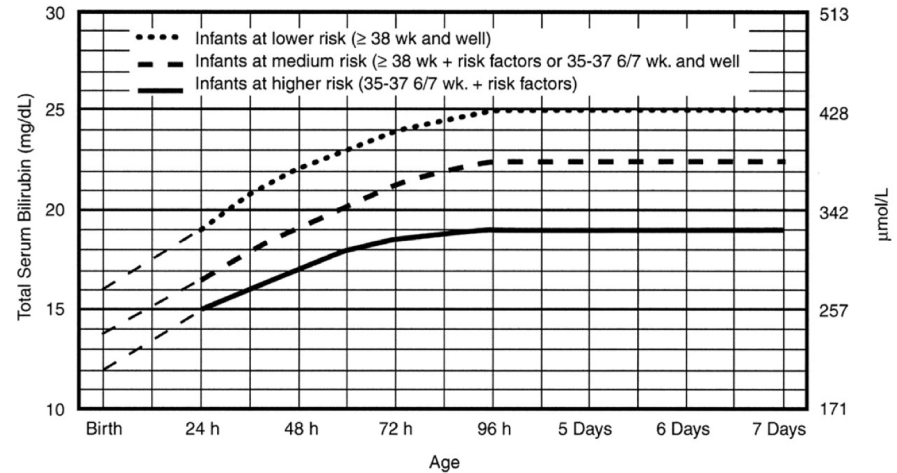
The online version of this article, along with updated information and services, is located on the World Wide Web at:
<http://pediatrics.aappublications.org/content/114/1/297.full.html>

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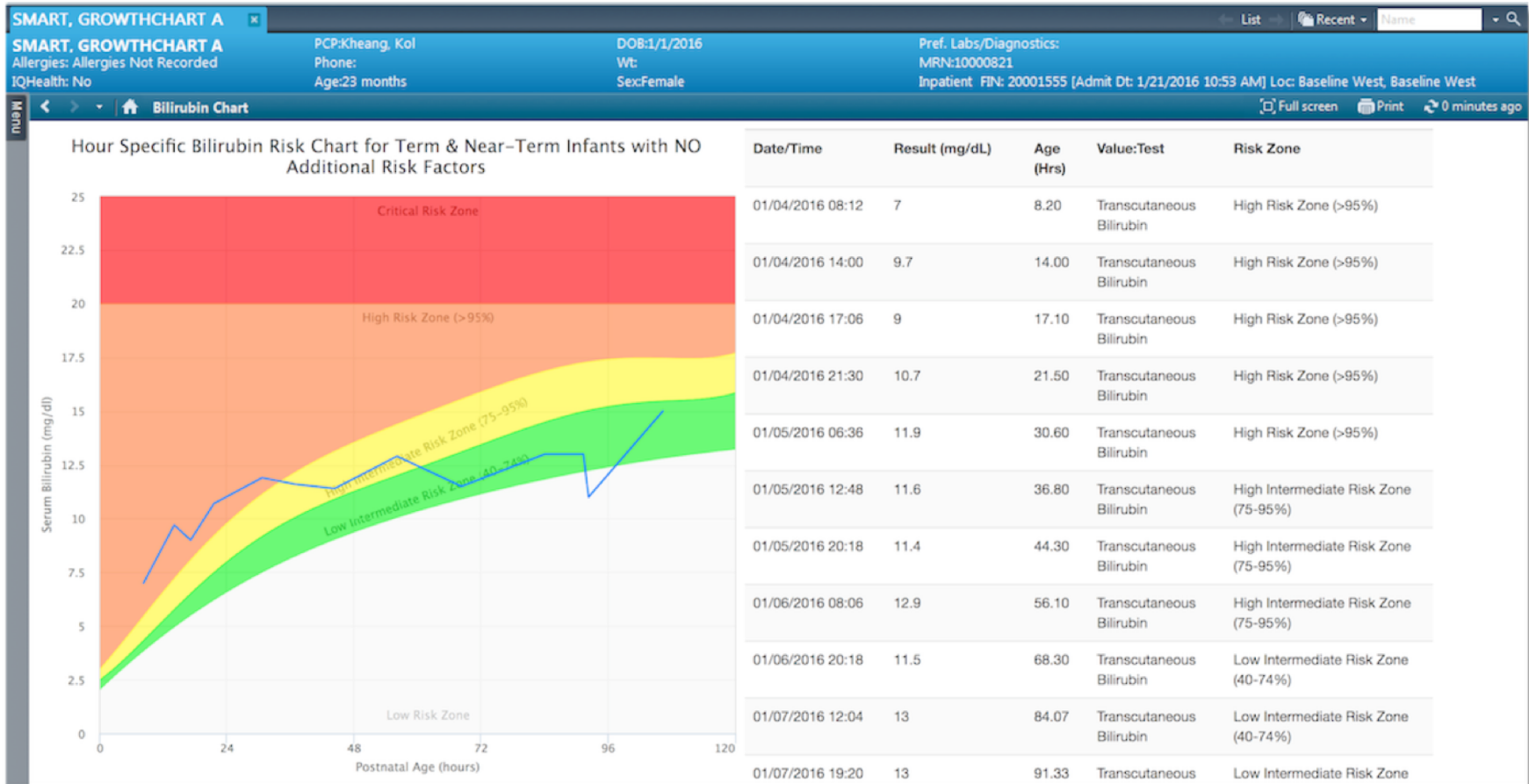
Downloaded from pediatrics.aappublications.org at LDS Hospital on February 6, 2014

Guidelines for exchange transfusion in infants 35 or more weeks' gestation. Note that these suggested levels represent a consensus of most of the committee but are based on limited evidence, and the levels shown are approximations.



- The dashed lines for the first 24 hours indicate uncertainty due to a wide range of clinical circumstances and a range of responses to phototherapy.
- Immediate exchange transfusion is recommended if infant shows signs of acute bilirubin encephalopathy (hypertonia, arching, retrocollis, opisthotonos, fever, high pitched cry) or if TSB is ≥5 mg/dL (85 μmol/L) above these lines.
- Risk factors - isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis.
- Measure serum albumin and calculate B/A ratio (See legend)
- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin
- If infant is well and 35-37 6/7 wk (median risk) can individualize TSB levels for exchange based on actual gestational age.

SMART on FHIR: Bilirubin Risk Chart



Web-based Adherence Estimator

www.adherenceestimator.com

Adherence Estimator®

Home |

Add to
to Your

Add New

The Adherence
of medication

Conversation
video experie

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Adherence Es
Conversation
for their next

Adherence Estimator®

Results

Patient name:

Date taken:

2/6/2018

Patient's adherence score:

23

Likelihood for
nonadherence:

High

Likelihood for Nonadherence Key

8–36 High likelihood of nonadherence (less than 32% probability of adherence)

2–7 Medium likelihood of nonadherence (32%–75% probability of adherence)

0 Low likelihood of nonadherence (greater than 75% probability of adherence)

Results are based on patient responses to 3 statements about: **COMMITMENT** (belief that the medication is necessary), **CONCERN** (belief that the medication may do more harm than good), and **COST** (belief that the medication is not affordable). The response to each of these statements is assigned a score. Likelihood of nonadherence is based on the sum of these scores.

Likelihood of Nonadherence Across the 3 Domains

COMMITMENT	MEDIUM	CONCERN	HIGH	COST	HIGH
Statement I am convinced of the importance of my prescription medication.		Statement I worry that my prescription medication will do more harm than good to me.		Statement I feel financially burdened by my out-of-pocket expenses for my prescription medication.	
Patient's Response Disagree Somewhat		Patient's Response Agree Completely		Patient's Response Agree Completely	
Suggested Conversation Let your patient know that it's important to take steps to reach their A1C goals, which can help prevent or delay complications of diabetes later on. This may mean checking blood sugar often, eating healthier, exercising more, and taking diabetes medication as you've prescribed.		Suggested Conversation Remind your patient that taking medications as prescribed is an important way to manage any health condition. But when he or she has diabetes and other health conditions, such as high blood pressure or high cholesterol, taking medications may be even more important for staying healthy and preventing problems in the future.		Suggested Conversation Let your patient know that as time goes on, they may be paying too much for refills of diabetes medication if they do not ask you or his or her pharmacist about the most affordable choices.	
Information the Patient Received It's important to take steps to help reach your A1C goal, which can help prevent		Information the Patient Received Taking medicines as prescribed is an		Information the Patient Received As time goes on, you may be paying too much for refills of your diabetes medicine if you do not ask your health care provider or pharmacist about the	

SMART on FHIR: AE in Cerner

Smart, Hailey

Smart, Hailey

Allergies: calamine-diphenhydramine topical, ciproflox... Phone:

IQHealth: No

PCP:McCurdy, Michael

DOB:12/2/2003

Wt:

Sex:Female

Pref. Labs/Diagnostics:

MRN:10002703

Inpatient FIN: 20003414 [Admit Dt: <No - Inpatient admit date>] Loc: 1N, Baseline East

Smart, Hailey

PCP:McCurdy, Michael

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Menu

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Medical Calculators

Blood Pressure Centiles v2

Adherence Estimator

WF Dashboard

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Medication List

Clinical Notes

Document Viewing

Flowsheet

Diagnoses and Problems

Patient Information

SMART App Validator DSTU2

Medication List

Document Medication by Hx

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External Rx History

No Check

Reconciliation Status

Meds History

Admission

Discharge

View

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Non Categorized

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Other

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Special

Consults

Therapies

Procedures

Medical Supplies

Medication History

Medication History Snapshot

Reconciliation History

Display: All Active Orders | All Active Medications

	\$		Order Name	Status	Details
Medications					
			hydrochlorothiazide	Ordered	25 mg = 1 tabs, Oral, Daily, first dose dttm: 09/28/17 9:08:00 PDT
			lisinopril	Ordered	5 mg = 1 tabs, Oral, Daily, first dose dttm: 09/28/17 9:08:00 PDT
			cetirizine (Zyrtec)	Ordered	10 mg = 1 tabs, Oral, Daily PRN for allergy symptoms, first dose dttm: 09/28/17 9:07:00 PDT
			ezetimibe (Zetia)	Ordered	10 mg = 1 tabs, Oral, Daily, first dose dttm: 09/28/17 9:07:00 PDT
			codeine	Ordered	30 mg, IM, q6hr PRN for pain, first dose dttm: 09/28/17 9:06:00 PDT
			paroxetine	Ordered	20 mg = 1 tabs, Oral, Daily, first dose dttm: 09/28/17 9:05:00 PDT
			simvastatin (simvasta...	Prescribed	10 mg = 1 tab(s), Oral, Once a day (at bedtime), # 90 tab(s), take daily
			warfarin	Ordered	1 mg = 1 tabs, Oral, Daily, first dose dttm: 09/14/17 9:00:00 PDT
			atorvastatin	Documente	= 132 mg, Oral, PRN
			atorvastatin 80 mg or...	d	sdsdsa
			furosemide (Lasix)	Documen...	80 mg, Oral, Daily, PRN, 80 mg, 1 tabs, Oral, Daily
			furosemide (Lasix)	Documen...	80 mg, Oral, Daily, PRN, 80 mg, 1 tabs, Oral, Daily

Details

Dx Table

Orders For Cosignature

Orders For Signature

SMART on FHIR: AE in Cerner

Smart, Hailey

Smart, Hailey

Allergies: calamine-diphenhydramine topical, ciprofl... Phone:

IQHealth: No

PCP:McCurdy, Michael

DOB:12/2/2003

Wt:

Age:14 years

Sex:Female

Pref. Labs/Diagnostics:

MRN:10002703

Inpatient FIN: 20003414 [Admit Dt: 6/22/2016 2:11 PM] Loc: 1N, Baseline East

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Patient Information

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Document Viewing + Add

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Diagnoses and Problems

SMART App Validator DSTU2

Adherence Estimator

HAILEY SMART

EXIT

Adherence Estimator® Results

Patient Name: Hailey Smart

Date Taken: Dec 07, 2017

Condition: Diabetes, Type 2

Medication: Aspirin 650 MG / butalbital 50 MG Oral Tablet

Patient's Adherence Score: 9

Likelihood for Nonadherence: HIGH

Likelihood of Nonadherence Across the 3 Domains

COST

HIGH

Statement

I feel financially burdened by my out-of-pocket expenses for my prescription medication

Patient Response

Agree completely

COMMITMENT

MEDIUM

Statement

I am convinced of the importance of my prescription medication

Patient Response

Agree somewhat

CONCERN

LOW

Statement

I worry that my prescription medication will do more harm than good to me

Patient Response

Disagree completely

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Study: Predicting CVD in HIV Patients

CE: Satish ED: Sushma Op: nvs HJR: LWW_HJR_200632

Wolters Kluwer | Lippincott
Williams & Wilkins



Original Scientific Papers

Predicting the risk of cardiovascular disease in HIV-infected patients: the Data collection on Adverse Effects of Anti-HIV Drugs Study

Nina Friis-Møller^a, Rodolphe Thiébaud^b, Peter Reiss^d, Rainer Weber^e, Antonella D'Arminio Monforte^f, Stéphane De Wit^g, Wafaa El-Sadr^h, Eric Fontas^c, Signe Worm^a, Ole Kirk^a, Andrew Phillipsⁱ, Caroline A. Sabin^j, Jens D. Lundgren^a and Matthew G. Law^k; for the DAD study group

^aCopenhagen HIV Programme (CHIP), University of Copenhagen/Faculty of Health Science, Copenhagen, Denmark, ^bAquitaine, INSERM, ISPED, Université Victor Segalen Bordeaux, Bordeaux, ^cNice Cohort, CHU Nice Hôpital de l'Archet, Nice, France, ^dATHENA, HIV Monitoring Foundation, Academic Medical Center, Amsterdam, The Netherlands, ^eSHCS, Division of Infectious Diseases and Hospital Epidemiology, Department of Internal Medicine, University Hospital Zurich, Zurich, Switzerland, ^fICONA, Hospital San Paolo, University of Milan, Italy, ^gSaint-Pierre Cohort, CHU Saint-Pierre Hospital, Brussels, Belgium, ^hCPCRA, Columbia University/Harlem Hospital, New York, USA, ⁱRoyal Free Centre for HIV Medicine and Department of Primary Care and Population Sciences, Royal Free and University College, London, UK and ^jAHOD, National Centre in HIV Epidemiology and Clinical Research, Sydney, Australia

Received 7 September 2009 Accepted 9 November 2009

Aims HIV-infected patients receiving combination antiretroviral therapy may experience metabolic complications, potentially increasing their risk of cardiovascular diseases (CVDs). Furthermore, exposures to some antiretroviral drugs seem to be independently associated with increased CVD risk. We aimed to develop cardiovascular risk-assessment models tailored to HIV-infected patients.

Methods and results Prospective multinational cohort study. The data set included 22 625 HIV-infected patients from 20 countries in Europe and Australia who were free of CVD at entry into the Data collection on Adverse Effects of Anti-HIV Drugs Study. Using cross-validation methods, separate models were developed to predict the risk of myocardial infarction, coronary heart disease, and a composite CVD endpoint. Model performance was compared with the Framingham score. The models included age, sex, systolic blood pressure, smoking status, family history of CVD, diabetes, total cholesterol, HDL cholesterol and indinavir, lopinavir/r and abacavir exposure. The models performed well with area under the receiver operator curve statistics of 0.783 (range 0.642–0.820) for myocardial infarction, 0.776 (0.670–0.818) for coronary heart disease and 0.769 (0.695–0.824) for CVD. The models estimated more accurately the outcomes in the subgroups than the Framingham score.

Conclusion Risk equations developed from a population of HIV-infected patients, incorporating routinely collected cardiovascular risk parameters and exposure to individual antiretroviral therapy drugs, might be more useful in estimating CVD risks in HIV-infected persons than conventional risk prediction models. *Eur J Cardiovasc Prev Rehabil* 00:000–000

© 2010 The European Society of Cardiology

European Journal of Cardiovascular Prevention and Rehabilitation 2010, 00:000–000

Keywords: antiretroviral drugs, cardiovascular risk, HIV, prediction model

Correspondence to: Nina Friis-Møller, MD, PhD, Copenhagen HIV Programme (CHIP), University of Copenhagen/Faculty of Health Science, Building 21.1, Blegdamsvej 3B, Copenhagen N DK-2200, Denmark
Tel.: +45 3945 5757; fax: +45 3945 5755;
e-mail: nfm@chip.dk

1741-8267 © 2010 The European Society of Cardiology

Introduction

Evidence from the Data collection on Adverse Effects of Anti-HIV Drugs Study (DAD) and other studies has established that exposure to certain antiretroviral drugs

DOI: 10.1093/HJR/0013d38336a150

The risk of CVD, CHD or MI are estimated as:

$1 - \exp(-H^t)$; where

$$H = \exp^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \beta_{12} x_{12}}$$

The values for beta and x for the three endpoints are summarised below:

	CVD	CHD	MI	Covariate, x
β_0	-10.970	-11.014	-11.695	
β_1	0.041	0	0.069	Multiply by duration of indinavir in years
β_2	0.077	0.074	0.111	Multiply by duration of lopinavir in years
β_3	0.489	0.547	0.715	β value if receiving abacavir, 0 otherwise
β_4	0.530	0.563	0.660	β value if male, 0 if female
β_5	0.348	0.342	0.291	β value times age/5
β_6	0.361	0.439	0	β value if family CVD history, 0 otherwise
β_7	0.854	1.024	1.390	β value if current smoker, 0 otherwise
β_8	0.238	0.481	0.697	β value if ex-smoker, 0 otherwise
β_9	0.652	0.654	0.826	β value if diabetes, 0 otherwise
β_{10}	0.195	0.219	0.246	multiply by cholesterol (mmol/l)
β_{11}	-0.402	-0.518	-0.415	multiply by HDL (mmol/l)
β_{12}	0.054	0.035	0.039	multiply by systolic blood pressure/10

CHD, coronary heart disease; CVD, coronary vascular disease; HDL, high-density lipoprotein; MI, myocardial infarction.

EHR Integrated CVD Risk Calculator

Steven F. Coleman
Gender: male | Birth Date: 1948-07-15 [69yo] | MRN: 2347217

Cardiac Risk for HIV patients

Cardiac Risk for HIV patients

This risk assessment tool uses patient-specific data to estimate the 10-year risk of cardiovascular disease (CVD), including coronary disease, cerebrovascular disease, peripheral vascular disease and heart failure, in patients with HIV. The tool is based on the results of the Data collection on Adverse Effects of Anti-HIV Drugs Study (DAD) using Poisson regression models. This tool applies to patients 30-74 years of age.

1 Patient Measurements

Systolic Blood Pressure

Normal less than 120 mm[Hg] | Pre-high 120-140 | High 140-160 | Very high more than 160

125

Total Cholesterol Level

Desirable less than 200 mg/dL | Borderline high 200-240 | High more than 240

200

HDL "good" Cholesterol Level

High risk less than 40 mg/dL | Normal 40-60 | Protective more than 60

53

2 Patient Data

☐ Diabetes Present

☐ Family History of CVD

Smoking history

Current | Former | Never

☐ Currently receiving abacavir (yrs)

Ever received indinavir (yrs)

Currently | Previously | Never

Ever received lopinavir (yrs)

Currently | Previously | Never

3 Your risk of having CVD in the next 10 years is:

0 | 15.2% | 100 %

4 Your risk would be lowered to:

14.1% if your blood pressure were 110 mmHg

✓ if you quit smoking

13.2% if your total cholesterol were 170 mg/dL

5 What now?

Diet and exercise can improve your cholesterol levels

Certain medications may be important in improving your cholesterol or blood pressure

Version: 1.0.4 | Copyright Interopion 2018

SMART on FHIR Overview



FHIR

**Fast Health
Interoperability Resources**

- Standardizes how health related data is structured and how it's accessed
- Created to address the short-comings of HL7 v2 & v3
- Emerging support by most major HIT vendors/providers




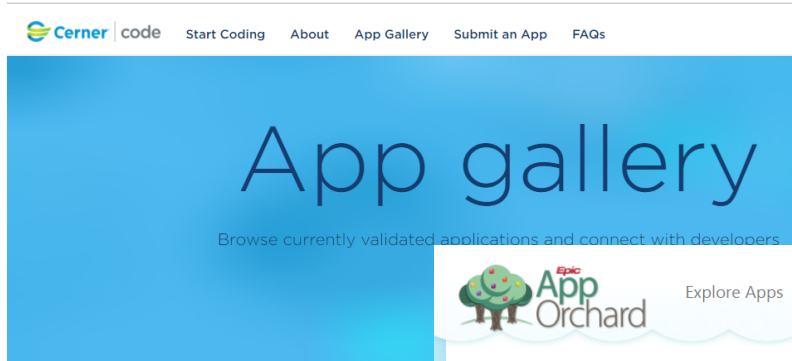
SMART

**Substitutable Medical Application
and Reusable Technology**

- Standardizes workflow integration and data access security
- Inspired by the emergence of the Apple and Android App Ecosystem
- Emerging support by most major HIT vendors/providers

Standardized Data + EHR Workflow Integration





Brings App Store Ecosystem Model to HIT



Explore Apps

Healthcare is better together.

The App Orchard is where developers can learn about Epic's APIs and list their apps for Epic community members to explore and access.

-  **Marketplace for apps**
Access a marketplace of apps for reporting, visualizations, content, and more.
-  **Access to hundreds of APIs**
Get documentation for Epic's APIs, including examples and a testing sandbox.
-  **Opportunities to collaborate**
Attend conferences with others working on the Epic platform.
-  **Support from Epic developers**
Our team will be there to lend a hand if you get stuck.



Find Apps by: Allscripts Products Category Des

Practice Management

Show all Apps

Sign up to learn more about what you can do with the App Orchard including available APIs and other services.

Learn More

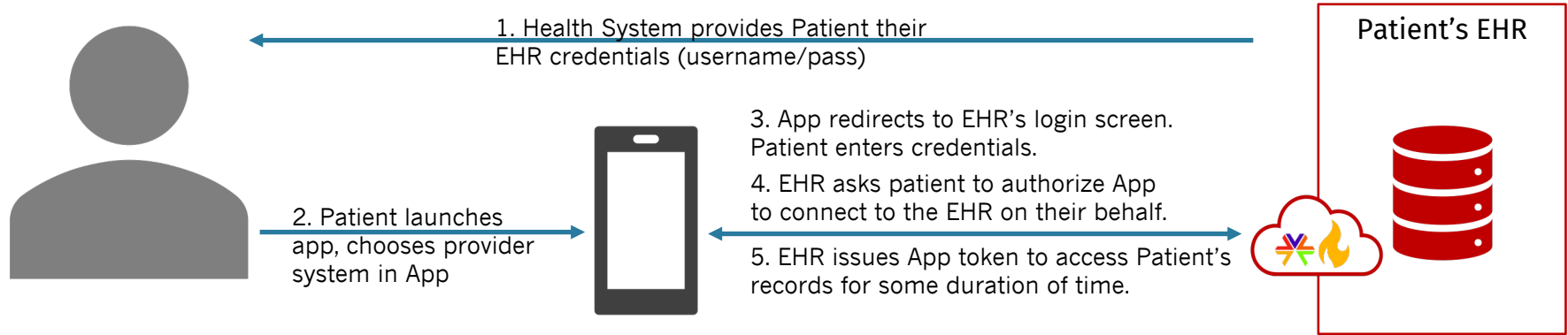
Looking for Apps?

Explore App Orchard's selection of apps.

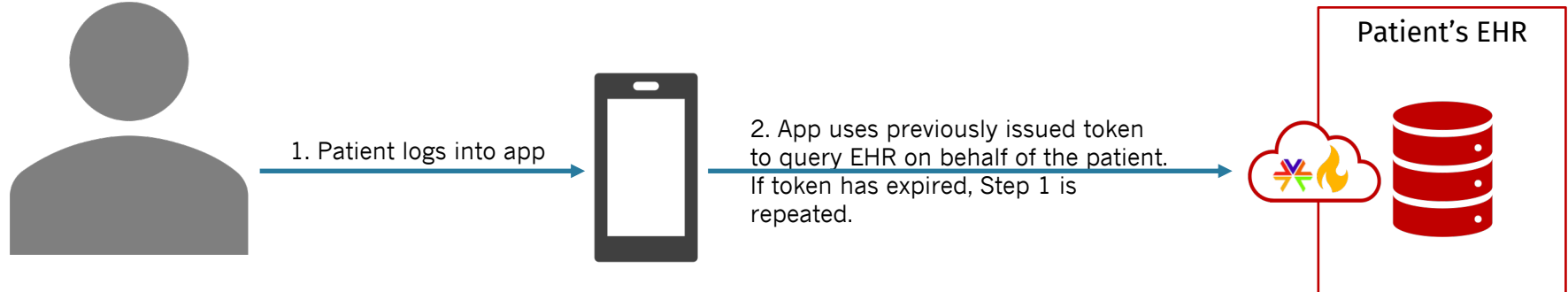
Go to Explore Apps

Patient Facing SMART on FHIR Apps

Step 1: Patient authorizes App to access records on their behalf.

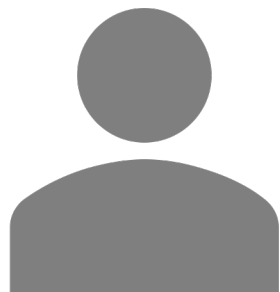


Step 2: App Accesses Patient's EHR Records Automatically

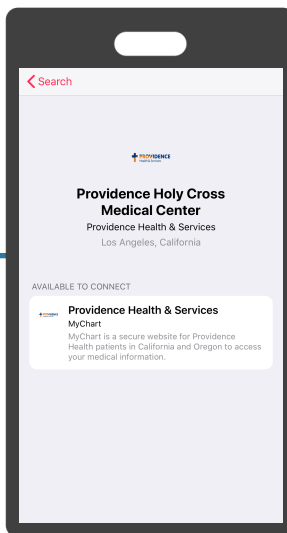
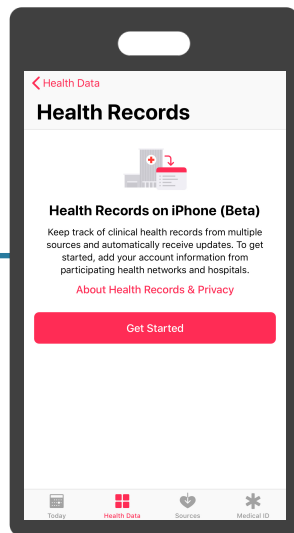


How Health Records gets FHIR Data

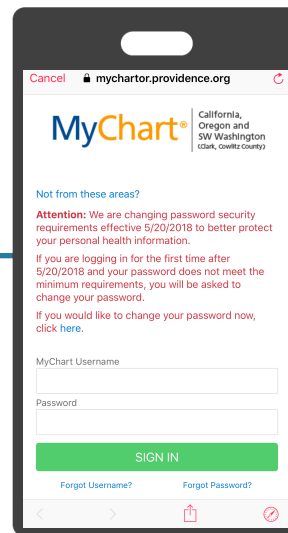
1. Health System provides Patient their EHR credentials (username/pass)



2. Patient opens Apple Health app

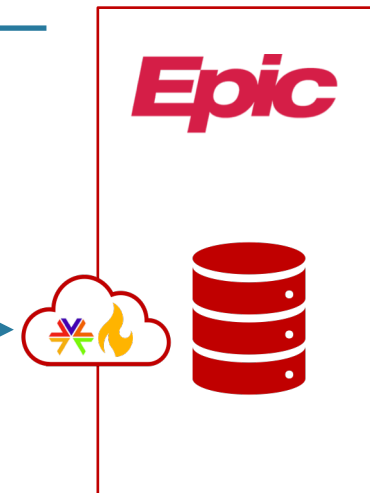


3. Patient chooses Health Provider



4. Redirects to EHR's login screen. Patient enters credentials.

5. EHR issues App token to access Patient's records for some duration of time.



SMART on FHIR Supports Many App Types

	Mobile	Web	Other
Patient			
Provider			
Related Person			
System			

Why CDS Hooks

Standard to invoke decision support from within a clinician's EHR workflow.

Limitations of SMART on FHIR

1. EHR User Launch (passive)
 - User proactively launches app
2. Limited Workflow Integration
 - Not bi-directional (i.e. a SMART app cannot provide context back to the EHR)



CDS Hooks Enables

1. Event Driven Launch
 - Launches based on clinical and user events
2. Expands workflow integration
 - Enables bi-directional communication back to the EHR (e.g. recommend dosing, alternate drug, etc.)

CDS Hooks: What's a hook?

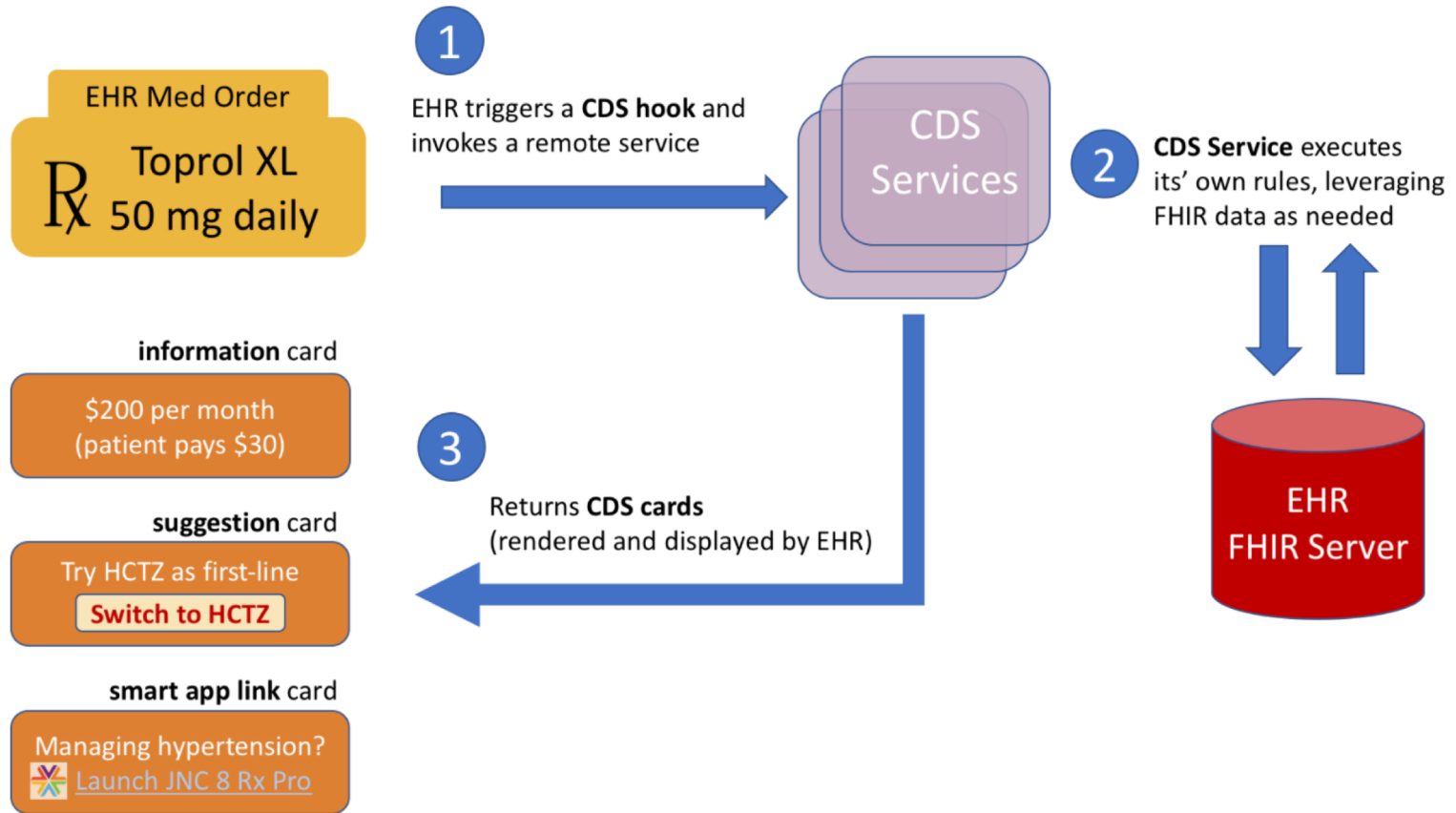
Currently

- Limited EHR User Interface based events
 - Patient View
 - Medication Prescribe
 - Order Review

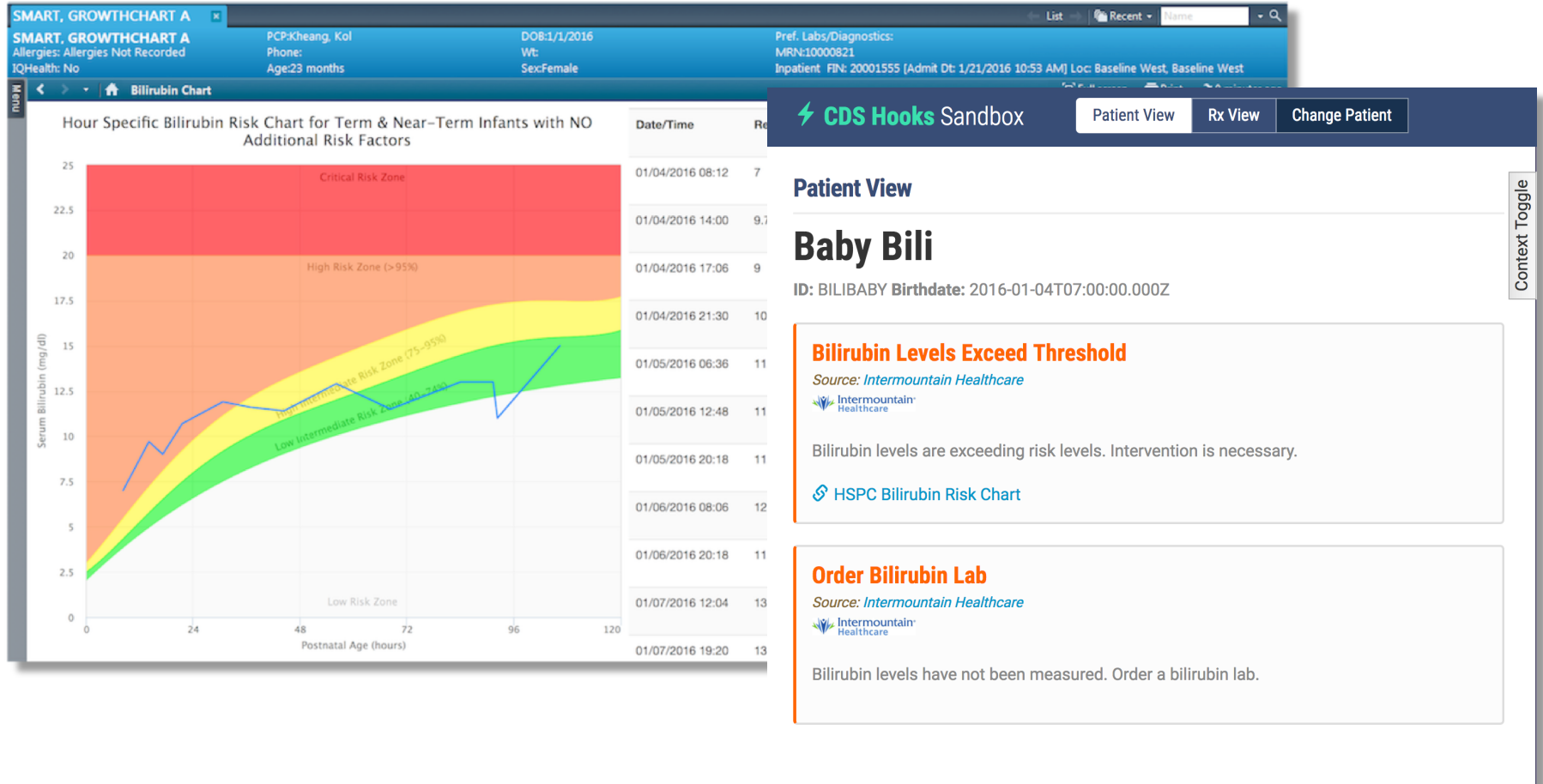
Future

- Expanded EHR UI based events
- Data driven events such as lab results
- Clinical events such as ADT

CDS Hooks Overview



CDS Hooks Use Case: Bilirubin Risk Chart



**Policy is a major factor in the adoption of
SMART on FHIR**

21st Century Cures Act

All EHRs need to make digital health data more accessible, the act states **open APIs** will be necessary for EHR system certification

APIs are sets of requirements that govern how one application can communicate and interact with another

An **open API** (often referred to as a public API) is a publicly available application programming interface that provides developers with programmatic access to a proprietary software application or web services

The Affordable Care Act: MU3

Eligible Professional Medicaid EHR Incentive Program Stage 3 Objectives and Measures Objective 5 of 8 Updated: August 2017

Patient Electronic Access to Health Information	
Objective	The EP provides patients (or patient-authorized representative) with timely electronic access to their health information and patient-specific education. EPs must satisfy both measures in order to meet this objective:
Measures	<ul style="list-style-type: none">• Measure 1: For more than 80 percent of all unique patients seen by the EP:<ol style="list-style-type: none">1) The patient (or the patient-authorized representative) is provided timely access to view online, download, and transmit his or her health information; and2) The provider ensures the patient's health information is available for the patient (or patient-authorized representative) to access using any application of their choice that is configured to meet the technical specifications of the Application Programming Interface (API) in the provider's CEHRT.• Measure 2: The EP must use clinically relevant information from CEHRT to identify patient-specific educational resources and provide electronic access to those materials to more than 35 percent of unique patients seen by the EP during the EHR reporting period.
Exclusions	Measure 1 and Measure 2: A provider may exclude the measures if one of the following applies: <ul style="list-style-type: none">• An EP may exclude from the measure if they have no office visits during the EHR reporting period.• Any EP that conducts 50 percent or more of his or her patient encounters in a county that does not have 50 percent or more of its housing units with 4Mbps broadband availability according to the latest information available from the FCC on the first day of the EHR reporting period may exclude the measure.

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- Attestation Requirements
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- Regulatory References
- Certification and Standards Criteria

Definition of Terms

API or Application Programming Interface – A set of programming protocols established for multiple purposes. APIs may be enabled by a provider or provider organization to provide the patient with access to their health information through a third-party application with more flexibility than is often found in many current "patient portals."

Provide Access – When a patient possesses all of the necessary information needed to view, download, or transmit their information. This could include providing patients with instructions on how to access

ACA Meaningful Use Stage 3 (MU3)

Objective 5 of MU3: Patient's health information is available for the patient to access using any application of their choice via an API.



MU3 Common Clinical Dataset

The patient's clinical data required to be made available as part of MU3 Object 5 is called the Common Clinical Dataset

- Patient Demographics
- Smoking Status
- Problems
- Medications
- Medication Allergies
- Labs
- Vitals
- Procedures
- Immunizations
- Care Team
- Implanted Devices IDs
- Goals
- Health Concerns
- Assessments & Plan of treatment

World's Leading EHRs choose SMART on FHIR for MU3



Apple chooses SMART on FHIR

Starting in iOS 11.3, iPhone users can connect to their healthcare provider and download their health records to Apple [Health Records](#).

MU3 goes into effect January 1, 2019

SMART on FHIR Availability

EHR Vendor	US Hospitals	Currently SoF Enabled	SoF Enabled by 1/1/2019
Epic	997	501	947
Cerner	994	656	944

Epic

- All health systems using Epic have the FHIR/SMART functionality available to them
- **Over 50%** of the EPIC hospitals have turned on the functionality
- Expecting close to **100%** to have turned on the functionality by 1/1/2019 (MU3 deadline)

Cerner

- FHIR/SMART API available to all US-based Cerner clients
- **66%** of all Cerner clients have implemented the FHIR/SMART API
- Majority of Cerner hospitals are expected to implement the API by the mandatory MU3 attestation period starting 1/1/2019



Apple's Health Records Timeline

- iOS 11.3 - March 28, 2018
 - Apple releases beta version of **Health Records** in iOS 11.3
 - Limited to 12 Health Systems participating in beta
 - Using SMART on FHIR, user logs into their health system's EHR through the Health Records iOS app
 - User authorizes Apple to download their MU3 health data to Health Records
 - Data is not stored centrally, only encrypted locally to the iOS device
 - Apple does NOT allow third party apps access to the data
- iOS 11.4 – May 29, 2018
 - Apple supports additional health systems (over 500 hospitals in the US)
- iOS 12 – September 17, 2018
 - Apple will allow iOS users to authorize 3rd Party Apps to access their data in Health Records

Our Projections of CDS Hooks Availability

- Epic – Q3/Q4 2018
- Cerner – Q4 2018
- Allscripts
 - Touchworks Q4 2018
 - Professional Q4 2018
 - Sunrise TBD (possibly Q1 2019)

Let's imagine what's possible.

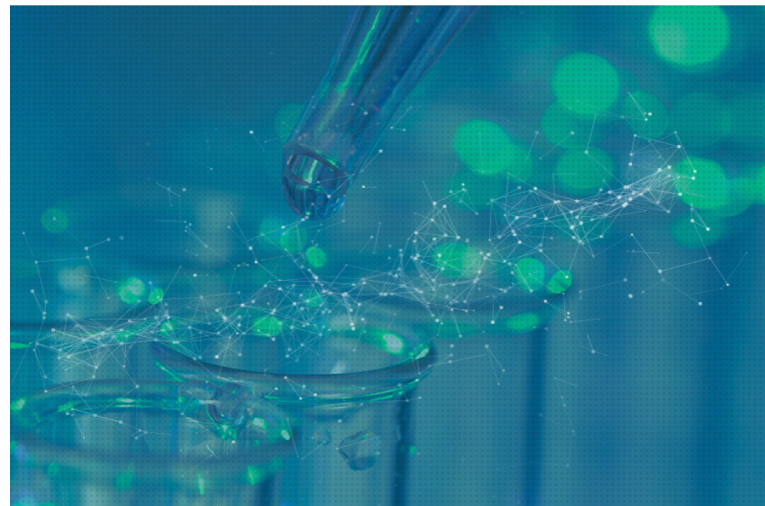
Insurers/Payers

- Prior Auth - process of getting permission before a procedure
- Formulary Management
- Medication and Care Pricing
- Patient Eligibility
- Medication reconciliation reporting
- Master member index
- Administrative workflow integration to advise (pre-admit, admit, discharge)
- Enable Payer's data accessible as a SMART on FHIR platform.
- Patients could access their data from their insurer similar to how they can from their Providers (e.g. using Apple Health Records)
- Enable third parties to integrate and access the Payer's data
- Quality Metrics
 - HEDIS measurements



Use Cases for Life Sciences & Pharmaceuticals

- Medication Adherence
- Patient Drug Indication
- Data and Workflow Integrated Clinical Trials
- Symptom/Adverse Event Tracking (Patient, Caregiver, and Clinician)
- EHR Integrated Educational Resources
- Context aware decision support
 - Dosing Calculators,
- Patient Engagement/Therapy Specific mobile resources
- Prior Authorization/Testing requirements



Population Health

- Regional/national tracking of guideline adherence to opioid protocols across entire nation
- Disease outbreak detection and tracking
- Enable researchers with realtime access to population level health data



Others Segments

SMART on FHIR will eventually integrate all segments of the continuum of care.

- Pharmacy
- Labs
- HIEs
- Etc.



What will you build?



(Interopion can help)