



Use Case Title: Patient Centered Interoperability

Short Description: Leo Simpson is a 42 year old auto body painter with asthma and pre-diabetes. He utilizes a personal health record (PHR) to manage, aggregate, and share his health information among multiple providers. Leo sends information from his PHR to his primary care provider. The PCP is able to facilitate a referral to the YMCA for a diabetes prevention program. Supported by the provider referral, the YMCA enrolls Leo in a diabetes prevention program and is able to communicate progress back to his provider. After seeing the PCP, he is also referred to a specialist for his asthma. Leo sends his updated information to the specialist. The specialist creates a care plan with Leo and informs him that his job is the cause of his asthma, requiring him to find new work. The qualified safety-net health center Leo visits, electronically sends his eligibility information and the prescription to a contract pharmacy to qualify him for a 340B medication discount. Over the ensuing months, Leo’s asthma symptoms resolve and his blood sugar improves.

Value: New EHR interoperability standards for API access to their information empowers patients to gather and share their aggregated records, improving patient outcomes and patient safety. Patients can update Occupational Data for Health such as adding recent exposures at work to guide clinical decision-making.

Scheduled times: This demonstration occurs 15 and 45 minutes past the hour.

Logos: AllianceChicago, Allscripts, CDC, YMCA of the USA, PatientLink, Virence, Walgreens

Scenario	Vendor	Products	Standards
The ONC’s 10 year interoperability plan is now beginning its 5th year, the year of the patient as a vital part of true interoperability. The 21st Century Cures Act and the MyHealthEDData Initiative underscore the importance of placing the patient at the center of care and interoperability.	PatientLink	MyLinks	FHIR

<p>All certified EHR vendors are required to provide an application programming interface (an API) to allow patients to gather their data. An API is a standard set of instructions that allow one computer system to communicate with another computer system. If both systems speak the same API language, they can share data with each other. Health organizations are required to allow patients to gather their data using any application the patient chooses, as long as the application uses the same API to communicate with their EHR.</p> <p>Because most EHR vendors have chosen the FHIR API as their interface to patient applications, a patient can use one FHIR application to pull data from all FHIR-enabled EHRs. This empowers patients to be a central participant in health information exchange.</p> <p>With all their aggregated data in their own hands, patients can now share their health information with their full care team to assure each organization has correct and complete information, providing another layer of safety for their treatment. Studies show that one in four patients arrive for an appointment and are then advised that important information from another provider had not been received for the current appointment. This causes a great burden to the patient and the office staff, often resulting in the patient having to reschedule their appointment.</p> <p>We will be demonstrating how FHIR has empowered patients to be the center of their care coordination by using MyLinks, a consumer-facing FHIR application, to gather information from a primary care provider and share it with a specialist. This demonstration will show how the FHIR API can be used to pull data from multiple EHRs and also post data to an EHR. Today we are presenting Leo Simpson who is a 42 year old auto body painter with asthma and pre-diabetes. Four months ago he presented to the ER with a cough and chest tightness and was prescribed inhalers for asthma. He has scheduled an appointment with his PCP for a follow-up.</p> <p>Leo previously imported his information from the ER visit into his personal health record in MyLinks. In preparation for his appointment, Leo is able to complete a questionnaire within MyLinks to provide information about his new job and current asthma symptoms. Leo updates his occupational information to note that he is a spray painter in an auto body shop and completes the asthma symptom questionnaire. He sends the updated information from MyLinks to his primary care provider. We are posting data via the FHIR API from MyLinks to the PCP's EHR.</p>			
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<p>At his last annual physical, his fasting blood sugar was 120 mg/dL and A1c was 6.0%. Due to the elevated A1C and blood sugar, the PCP is referring Leo to the YMCA to initiate a diabetes prevention program, a group-based program facilitated by a trained coach focused on behavior change to reduce risk of type 2 diabetes.</p> <p>At the visit, the PCP confirms the diagnosis of asthma. Leo reports his asthma began recently with worsening symptoms after the initial treatment. His primary care provider notes the change in job based on the Occupational Data for Health and inquires about whether his asthma symptoms are better or worse at work or away from work.</p> <p>Recent onset asthma questions include:</p> <p>(1) Do/did your asthma symptoms start at your current/recent workplace?</p> <p>(2) Do/did your asthma symptoms worsen at work?</p> <p>(3) Are asthma symptoms different (eg, better) on days off work and/or holidays?</p> <p>He notes that symptoms are noticeable early in the work shift and worse at night after getting home. They improve over the weekend. The provider is concerned about the possible link to the paint at Leo's new job and recommends to Leo to identify the paints in use and bring that information to the specialist. His physician refers him to an occupational medicine specialist for further evaluation. His physician also refers him to a diabetes prevention program at the YMCA.</p>	AllianceChicago	Centricity Practice Solutions / Qvera	FHIR C-CDA with ODH FHIR BSeR referral transaction
<p>The YMCA receives a referral from Leo's physician with the data it needs via a FHIR referral message. The Y only needs a subset of data from the referring provider, which is now possible with the FHIR standards. They automate the segmentation of the data so that the program only gets the specific data it needs.</p> <p>Leo attends the diabetes prevention program at the Y and learns strategies for healthy eating and increased physical activity.</p>	The Y (CDC)	REDCap	BSeR (FHIR) referral receipt and feedback transmission. (FHIR)

<p>The Y sends feedback on Leo’s participation and progress in the program back to his PCP.</p>			
<p>After seeing his PCP, Leo imports the new information into MyLinks via the new FHIR standard. The information has his updated clinical lists plus a C-CDA, which includes his occupational history. Leo has chosen a specialist outside of his PCP’s network and wants to make sure the specialist has all his clinical and occupational history. He sends the specialist his aggregated information from his PHR, which includes the ER visit information, updated clinical lists, and the C-CDA provided by the PCP. Leo also includes additional information in the Occupational Data for Health that the spray paint contains isocyanates. Feeling confident that the specialist has all his information, Leo arrives at the specialist’s office.</p>	<p>PatientLink Enterprises, Inc</p>	<p>MyLinks</p>	<p>FHIR Direct Trust C-CDA FHIR Subscription</p>
<p>After receiving the information Leo sent from MyLinks to Allscripts Professional EHR, the occupational medicine physician reviews the information and discusses his current tasks which involve the use of the isocyanate-based paint, and the presence or absence of controls at work to reduce exposures. Though Leo wears a full face respirator when doing this work, the physician notes that the respirator is not appropriate for the exposures identified and would not have an adequate seal in the presence of facial hair, even if it were the correct type for the exposure.</p> <p>She finds it highly likely that work is causing or contributing to the asthma and suggests two weeks away from work as a trial.</p> <p>She provides links to educational materials for workers on the dangers of these paints and schedules a follow up visit in two weeks.</p> <p>She sends a care plan to the PCP.</p> <p>After seeing the specialist, Leo is able to import his new clinical information and care plan into MyLinks via the FHIR API from his provider’s Allscripts Professional EHR.</p> <p>Leo is able to review his new care plan to make sure he understands and follows through with instructions. He takes two weeks off and his symptoms of wheezing, chest tightness, and shortness of breath resolve. Leo returns to work and within a few hours redevelops the</p>	<p>Allscripts</p>	<p>Allscripts Professional</p>	<p>FHIR C-CDA with ODH</p>

chest symptoms. The specialist restricts him from that work and the patient files a workers' compensation claim. The employer provides no alternative work and terminates Leo's employment. The specialist recommends continuing on current medication regimen for the next two months.			
<p>Leo will need to refill his medications in two weeks. The qualified safety-net health center, where Leo sees his doctor, participates in the 340b program and allows him to take advantage of discounted prescription pricing at their contract pharmacy. Leo's eligibility information is transmitted to the pharmacy, which charges him a reduced rate for his medication.</p> <p>The physician explains to Leo that in Connecticut, where Leo lives and works, occupational diseases are reportable to the state. The physician makes a report of occupational asthma, alerting the state to the case at this workplace. The state health department is aware of one other case at this workplace and calls Leo to discuss the conditions of work. The health department calls the employer and asks to conduct a site visit to identify risks for occupational asthma and suggest exposure control strategies to protect other workers.</p> <p>The physician sees that Leo has participated in the diabetes prevention program at the YMCA. Leo begins looking for new work. His asthma symptoms resolve over the next six months.</p>	AllianceChicago	Centricity Practice Solutions	FHIR Subscription FHIR Resource
<p>Leo's PCP uses Virence Centricity Practice Solution for ambulatory care EHR. FHIR standards are used for all of the information exchanged between Virence CPS and other systems used by Leo's care team. This includes both reading and writing data with support for FHIR STU3 and STU2 CCDAs are generated using data pulled from FHIR APIs. FHIR Subscriptions have been used to support automated exchange of information for sending referral requests to the Y and Walgreens. After Leo's PCP refills prescriptions for his Asthma medicine, a FHIR bundle with the medication order and all related resources are automatically sent to Walgreens via FHIR Subscriptions.</p>	Virence Health Technologies	Centricity Practice Solutions	<p>FHIR STU3 and STU2</p> <p>http://mydata.gehealthcare.com</p> <p>FHIR Subscriptions FHIR Read and Create</p>
340B Eligibility for Uninsured Patients:	Walgreens	W-Rx	FHIR Medication Order

A provider (PCP) from the 340B eligible health center, writes a prescription for the uninsured patient and transmits it to one of the Walgreens pharmacies. The eligibility information, in the form of the HL7 FHIR Medication Resource is shared with Walgreens in near real-time. Walgreens then leverages this information to confirm patient's eligibility for the discounted prescription co-pay established by the health center.

The ONC's 10 year interoperability plan is now beginning its 5th year, the year of the patient, as an important part of true interoperability. Health systems and EHR vendors have worked hard to include API access to patients, with most vendors choosing FHIR as their API choice. Now patients are able to gather, manage, and share their records to make sure all their care providers have the same information. Studies have shown patient outcomes and patient safety improve when patients are able to view and share their data freely.

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
PatientLink	MyLinks	Consumer Application Personal Health Record	FHIR	HL7	FHIR	Observation Creator	N/A	Send	Patient sends occupational data and completed asthma assessment to PCP
			FHIR	HL7	FHIR	Clinical Data Consumer	N/A	Receive	Patient pulls FHIR data and C-CDA from PCP
			C-CDA	Direct Trust	Direct	Clinical Data Sender	N/A	Send	Patient sends C-CDA to Specialist
			FHIR	HL7	FHIR	Clinical Data Consumer	N/A	Receive	Patient pulls FHIR data with Care Plan from Specialist
AllianceChicago	Centricity Practice Solutions / Qvera	Primary Care Physician	HL7 FHIR	HL7	FHIR	FHIR Resource	NA	Send	FHIR Document Resource
			HL7 FHIR	HL7	FHIR	Information Recipient	NA	Receive	FHIR Post

			CDA	HL7	FHIR	Information Source	NA	Send	C-CDA With Occupational Data for Health Section
			HL7 FHIR	HL7	BSeR	Information Consumer	NA	Receive	FHIR Post
			HL7 FHIR	HL7	BSeR	Information Source	NA	Send	FHIR Post
The Y	REDCap	Community Pre-Diabetes Program	HL7 FHIR	HL7	BSeR	Information Consumer	NA	Receive	FHIR Post
			HL7 FHIR	HL7	BSeR	Information Source	NA	Send	FHIR Post
Allscripts	Allscripts Professional	Occupational Medicine Specialist	C-CDA	Direct Trust	Direct	Clinical Data Sender	NA	Receive	Specialist receives C-CDA from Patient
			HL7 FHIR	HL7	FHIR	FHIR Resource	NA	Data Source	The patient retrieves their visit information
			C-CDA	HL7	C-CDA	Content Creator	NA	NA	Encounter summary record
			C-CDA	IHE	XDR	Information Source	ITI-41	Send	Send the encounter summary to primary care physician.
Virence Health Technologies	Centricity Practice Solutions	Primary Care Physician	C-CDA	IHE	XDR	Information Recipient	ITI-41	Send	Send the encounter summary to primary care physician.
			C-CDA	HL7	C-CDA	Content Consumer	NA	NA	Encounter summary record
			HL7 FHIR	HL7	BSeR	Information Consumer	NA	Receive	FHIR Post
			HL7 FHIR	HL7	BSeR	Information Source	NA	Send	FHIR Post

			HL7 FHIR	HL7	FHIR	FHIR Resource	NA	Receive	FHIR Post, Including Occupational Data for Health
			HL7 FHIR	HL7	FHIR	FHIR Resource	NA	Send	FHIR Post, Document Reference
			HL7 FHIR	HL7	Medication Order	FHIR Resource	NA	Send	FHIR Post, Medication Order
Walgreens	W-Rx	Pharmacy	HL7 FHIR	HL7	Medication Order	FHIR Resource	NA	Receive	FHIR Post, Medication Order