



Use Case Title: Immunization Evaluation & Integration

Short Description: Follow Aria from early childhood into adulthood as she moves through multiple care locations and receives immunizations over time. Immunization schedules have become more complex as more vaccines have been added to the routine schedule, especially for adolescents and adults. Clinical decision support for immunizations is becoming increasingly available both within local EHR systems and in response to queries to immunization information systems at the local and state levels. Throughout the care process, workflows that are demonstrated reflect the clinical capabilities tested in the HIMSS Immunization Integration Program (IIP).

Value: Improved access to comprehensive vaccine history and vaccine forecasts can improve immunization rates and decrease the incidence of vaccine-preventable disease. Interoperable systems, current calculation engines, and a future health care provider (HCP-facing) FHIR app place EMRs on a convergent path with immunization registries, enhancing data quality by capturing accurate data at the point of care, and streamlining workflow to increase productivity and reduce re-work.

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

Logos: Cerner, DSS, Epic, HLN, Hyland, STC, Surescripts

Scenario	Vendor	Products	Standards
<p>Step 1: Pediatrician: Aria at age 7 Aria was born in the US and at the age of four months her family moved overseas for work. When she was 7 they moved back to the US and her parents begin to establish care in their new city. The provider uses the DSS Juno application.</p>	DSS	iDB	HL7 V2.5.1/MU f7 VXU, QBP/RSP C-CDA HL7 vMR, OMG/HL7 DSS IHE XDR

<p>They are back in the state where she was born so when she arrives for her appointment the provider queries the application and it returns her vaccines through the age of two months.</p> <p>The mother also produces a history of the third Hepatitis B vaccine received while they were living overseas. This historical vaccine is documented in the record. The provider queries the STC IIS registry, and reviews the child's forecast using the HLN ICE immunization forecasting.</p> <p>Aria's mother thinks the child has had chicken pox, so a lab order is placed for Varicella immunity. The results will be transmitted to her pediatrician once returned. Her provider administers vaccines according to the catch-up schedule, minimizing data entry using vial barcodes.</p>			
<p>Step 2: Decision Support Evaluation of the history and the forecast is performed by clinical decision support services.</p>	HLN	Immunization Calculation Engine (ICE)	HL7 vMR, OMG/HL7 DSS
<p>Step 3: Pediatrician: Aria at age 8 Now Aria is 8 years old and going to a new provider who uses the Epic EHR. A query to the Immunization Registry returns a forecast indicating that Aria is due for Varicella, Tdap and her annual flu vaccine. Her previous pediatrician has forwarded her records containing the serology results indicating her immunity to Varicella. Her pediatrician administers Tdap and Influenza vaccinations. An update of both the administrations and evidence of immunity to Varicella is sent to the registry.</p> <p>Her pediatrician refers Aria's parents to participate in the Immunization Registry's patient-portal to subscribe to reminders for future vaccines due. Through this portal, her parents can access her immunization records for school and camps.</p>	Epic		HL7 V2.5.1/MU f7 VXU, QBP/RSP IHE XDR GS1 2D barcodes
<p>Step 4: Immunization Registry Patient Portal At age 10, Aria is off to camp and is already signed up for the MyIR portal. Aria's mom is able to access the immunization record online. She is able to print the 'yellow card'</p>	STC	MyIR	HL7 V2.5.1/MU f7 VXU, QBP/RSP

certificate to provide the camp and her new school as proof that she is up-to-date on her vaccinations, which is required for registration.			
<p>Step 4: Primary Care</p> <p>Aria is now 11 years old and has an annual care visit where she is due to her flu vaccine and her Tdap vaccine. Her primary care provider uses the LIT on FHIR app which is seamlessly integrated with the EHR and displays data based on data from the EHR, data from other health care channels, and calculations from ICE.</p>	HLN	LIT on FHIR (Lifelong Immunization Tracker)	HL7 vMR, OMG/HL7 DSS HL7 FHIR
<p>Step 5: Primary Care</p> <p>Aria, now age 13, has moved across the state and her new provider uses Cerner PowerChart.</p> <p>Checking with the Immunization Registry, and internal forecasting engine, Aria's provider determines she is due to begin HPV and MCV4, and for catch-up with Tdap. She is vaccinated, and her provider is able to scan the vaccines given to minimize data entry.</p>	Cerner	PowerChart	HL7 V2.5.1/MU f7 VXU, QBP/RSP GS1 2D barcodes
<p>Step 6: Pharmacy</p> <p>Aria is now an 18-year-old college freshman. She enters a pharmacy to pick up her birth control prescription and while there, the pharmacy tech reviews her immunization status, and notices she needs her 2nd doses of the Meningococcal vaccine and the HPV vaccine. The Meningococcal vaccine is administered while Aria refuses the 2nd dose of HPV.</p>	STC	LabLink	HL7 V2.5.1/MU f7 VXU, QBP/RSP

HIMSS19 Interoperability Showcase Use Case

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
DSS Inc.	iDB	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			ebXML	IHE ITI	XDR	Document Recipient	ITI-41	Receive	Provide and Register Document Set.b
			WS/DSS	HL7/OMG	CDS	Sender	vMR	Query	Request for Patient to be Evaluated
			WS/DSS	HL7/OMG	CDS	Receiver	vMR	Receive	Receive the HL7 Decision Support Service response
HLN	Immunization Calculation Engine (ICE)	Decision Support	CDS	OMG/HL7	DSS	Client Decision Support	Request for Patient to be Evaluated	Receive	HL7 Decision Support Service
			CDS	HL7	vMR	Send	vMR	Send	Send the HL7 Decision Support Service response

	NA	Ambulatory EMR	DSS, FHIR, CQL	HL7	Clinical Reasoning IG, DSS IG, CDS Hooks IG	Guidance service provider	FHIR	Receive	Receive and process CDS guidance request.
Epic	NA	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			GS1-128	GS1	1-D Barcode	Reader	GS1-128	Receive	GS1 2D barcodes
			ebXML	IHE ITI	XDR	Document Recipient	ITI-41	Receive	Provide and Register Document Set.b
STC	MyIR LabLink	Immunization Registry	HL7 v2.5.1	HL7	Z22	Receiver	VXU	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z44	Receiver	QBP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z42	Sender	RSP	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast

Cerner	PowerChart	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
			GS1-128	GS1	1-D Barcode	Reader	GS1-128	Receive	GS1 2D barcodes

References:

HL7 Version 2.5.1 Implementation Guide for Immunization Messaging (VXU, QBP/RSP) (Online at <https://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-5-2014-11.pdf>)

HIMSS Immunization Integration Program (Online at <https://www.himssinnovationcenter.org/immunization-integration-program>)