



**Use Case Title: Immunization and Vaccination**

**Overview** Bryson, at age 2, is overdue for some of his routine childhood vaccinations. His pediatrician refers his parents to participate in the Immunization Registry’s patient-portal to subscribe to reminders for future vaccines due. Through this portal, his parents can access his immunization records for school and camps. At age 4, Bryson’s new pediatrician is able to reconcile his vaccinations from multiple information sources and keep him on schedule. As a teen, Bryson’s physicians order titers before administering boosters due to illness.

**Value:** Immunization and Vaccination: The immunization portal allows caretakers to easily access immunization records for schools and colleges as well as gather information about current trends in treatments. Interoperability drives STEPS to value by providing a single source for historical data on previously received vaccinations.

Scenario	Vendor	Products	Standards
<p><i>Pediatrician: Bryson at age 2</i>            Bryson sees the pediatrician for a routine check-up. The provider queries the immunization registry for the child’s vaccine history and forecast, which shows that Bryson is past due for Haemophilus influenzae type B (Hib) and pneumococcal conjugate (PCV-13) vaccinations. Mom has been busy, and didn’t know that Bryson was off schedule. The provider administers both vaccines. Bryson is moved on to the catch up schedule’, so will be marked complete with just three doses rather than the typical four. The provider refers Bryson’s mom to register for <b>My Immunization Record (MyIR)</b> offered by the State Immunization Registry</p>	Epic	CareEverywhere	HL7 v2.5.1 VXU, QBP/RSP
<p><i>Immunization Registry Patient Portal</i>            Bryson’s mom signs up for MyIR to better manage keeping him up to date with his vaccinations. The family moves across the state. MyIR notifies Bryson’s mom that is due for additional vaccines, and she schedules an appointment with a new pediatrician.</p>	STC	MyIR	HL7 V2 VXU, QBP/RSP

<p><i>Pediatrician: Bryson at age 4</i>  Bryson is taken to see his new pediatrician. The pediatrician's office records a historical vaccine based on an out-of-state Emergency visit which showed that Bryson received the 4<sup>th</sup> diphtheria, tetanus, and pertussis (DTaP) vaccine when he was cut while on vacation. A query to the Immunization Registry provides Bryson's vaccine history and forecast, but the 4<sup>th</sup> DTaP was not listed as it was administered in a different state. The provider reconciles the immunizations known to the EMR with those received from the registry. The 3 forecasted vaccines are administered, and a record of these along with the historical vaccine are sent to the Immunization Registry following the visit.</p>	DSS Inc.		HL7 v2.5.1 VXU, QBP/RSP, XD*
<p><i>Immunization Registry Patient Portal</i>  Bryson's mom is able to access his immunization record online. She is able to print the 'yellow card' certificate to provide to his summer camp and his new school as proof that he is up-to-date on his vaccinations, which is a required for registration.</p>	STC	IWEB	HL7 V2 VXU, QBP/RSP
<p><i>Group Practice: Bryson age 12</i>  Bryson is seen by a specialist at Age 12 where he is diagnosed with leukemia. The diagnosis is informed by the laboratory results available through the health information exchange. Prior to beginning chemotherapy treatment, which will leave Bryson immunodepressed, the provider checks the immunization history available from the Immunization Registry. The provider verifies that Bryson is up to date on his routine vaccines, but has not yet received his flu shot. The Influenza vaccine is administered, and communicated to the registry.</p>	eClinicalWorks	eClinicalWorks Electronic Health Record	HL7 V2 VXU, QBP/RSP ITI-41 CCDA, Any document Query/retrieve CareQuality (RLS)
<p><i>Laboratory: Bryson age 13</i>  Bryson will be attending a new school, where they require additional boosters. Since his leukemia has him immunosuppressed, laboratory titers are performed to verify immunity. The laboratory results are sent to the pediatrician and are available to the patient via portal and to other providers via Health Information Exchange.</p>	Ellkay	LKTransfer	HL7 2.x Result CCD/CCDA
<p><i>Pediatrician: Bryson age 13</i>  Bryson's pediatrician is able to retrieve the specialist records from the health information exchange and the immunization history from the Immunization Registry. Based on the immunosuppressed state from the leukemia treatment, a titer was ordered to determine whether or not Bryson would need boosters. The titer results are received from the lab and available in the patient record. The titers</p>	NextGen	NextGen Ambulatory EHR	HL7 Lab Orders/ Results HL7 CCD.CCDA IHE XDS.b IHE XCA

indicate evidence of immunity, with no need to receive boosters for Measles Mumps and Rubella (MMR) or Polio (IPV). The serological evidence of immunity is communicated to the Immunization Registry.			
<i>HIE Infrastructure</i> Health information exchange services enable sharing of laboratory results and clinical summary document exchange within and across communities.	Cerner	Cerner HIE	XDS, XCA, FHIR; Transform to XD*Lab from HL7 V2.x lab message
<i>HIE Infrastructure</i> Cross-community interoperability is provided supporting location of patient historical visits, document retrieval, communication of physician notification letter, and access to pharmacy immunizations.-	Surescripts		XCPD, PLQ

HIMSS18 Interoperability Showcase Use Case

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Epic	CareEverywhere	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Send Immunization History
Epic	CareEverywhere	Ambulatory EMR	HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Request Complete Immunization History
Epic	CareEverywhere	Ambulatory EMR	HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated

									History and Forecast
Epic	CareEverywhere	Ambulatory EMR	ebXML	IHE ITI	XCA	Responding Gateway	ITI-18, ITI-43	Respond	Registry Stored Query Retrieve Document Set
STC	MyIR	Immunization Registry	HL7 v2.5.1	HL7	Z22	Receiver	VXU	Send	2.5.1 Messaging Guide for Immunization Send Immunization History
STC	MyIR	Immunization Registry	HL7 v2.5.1	HL7	Z44	Receiver	QBP	Send	2.5.1 Messaging Guide for Immunization Request Complete Immunization History
STC	MyIR	Immunization Registry	HL7 v2.5.1	HL7	Z42	Sender	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
DSS Inc.		Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Send

									Immunization History
DSS Inc.		Ambulatory EMR	HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Request Complete Immunization History
DSS Inc.		Ambulatory EMR	HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Send Immunization History
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Request Complete Immunization History

eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	HL7 CDA	HL7	CCDA	Content Creator	NA	Create	Create Continuity of Care Document
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	ebXML	IHE ITI	XCA	Document Consumer	ITI-18, ITI-43	Receive	Registry Stored Query Retrieve Document Set
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	ebXML	CareQuality	RLS	Document Consumer		Receive	
eClinicalWorks	eClinicalWorks Electronic Health Record	Ambulatory EMR	ebXML	CareQuality	RLS	Document Source		Send	
Ellkay	LKTransfer	Lab	HL7 V2.x	HL7	R01	Sender	ORU	Send	Send Unsolicited Observation Message
Ellkay	LKTransfer	Lab	HL7 CDA	HL7	CCDA	Content Creator	NA	Create	Create Continuity of Care Document
Ellkay	LKTransfer	Lab	ebXML	IHE ITI	XDS.b	Document Source	ITI-41	Send	Provide and Register Document Set.b

NextGen	NextGen Ambulatory EHR	Ambulatory EMR	HL7 v2.5.1	HL7	Z22	Sender	VXU	Send	2.5.1 Messaging Guide for Immunization Send Immunization History
NextGen	NextGen Ambulatory EHR	Ambulatory EMR	HL7 v2.5.1	HL7	Z44	Sender	QBP	Send	2.5.1 Messaging Guide for Immunization Request Complete Immunization History
NextGen	NextGen Ambulatory EHR	Ambulatory EMR	HL7 v2.5.1	HL7	Z42	Receiver	RSP	Receive	2.5.1 Messaging Guide for Immunization Return and Evaluated History and Forecast
NextGen	NextGen Ambulatory EHR	Ambulatory EMR	HL7 V2.x	HL7	R01	Sender	ORU	Send	Send Unsolicited Observation Message
NextGen	NextGen Ambulatory EHR	Ambulatory EMR	HL7 CDA	HL7	CCDA	Content Consumer	NA	Consume	Consume Continuity of Care Document
NextGen	NextGen Ambulatory EHR	Ambulatory EMR	ebXML	IHE ITI	XCA	Document Consumer	ITI-18, ITI-43	Receive	Registry Stored Query Retrieve Document Set



NextGen	NextGen Ambulatory EHR	Ambulatory EMR	ebXML	CareQuality	RLS	Document Consumer		Receive	
Cerner	Cerner HIE	HIE	ebXML	IHEITI	XDS.b	Document Registry	ITI-18	Respond	Registry Stored Query
Cerner	Cerner HIE	HIE	ebXML	IHEITI	XDS.b	Document Repository	ITI-43	Respond	Retrieve Document Set
Cerner	Cerner HIE	HIE	ebXML	IHEITI	XCA	Responding Gateway	ITI-18 ITI-43	Respond	Registry Stored Query Retrieve Document Set
Surescripts		HIE	HL7	IHE-ITI	XCPD	Responding Gateway	ITI-55 ITI-56	Respond	Cross-Gateway Patient Discovery Patient Location Query
Surescripts		HIE	HL7	IHE-ITI	PLQ	Patient Location Manager	PLQ-02	Respond	Patient Location Query

**HIMSS Value STEPS Framework:**

Step	Description	Point of View	Point of View
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S: Satisfaction	<p>This type of value focuses on people, process and technology use cases that increases stakeholders' satisfaction with the delivery of care. Satisfaction includes types of value such as:</p> <ul style="list-style-type: none"> <li>Patient satisfaction</li> <li>Provider satisfaction</li> <li>Staff satisfaction</li> <li>Other satisfaction</li> </ul>	<p>Having the ability to track all immunizations/vaccines in an aggregated portal helps the family/caregiver keep on track with important immunization schedules. With family moves and the need for access to this data for child's activities, an easy one-point access to this information saves the family time tracking down these details or waiting for paper record requests from their pediatrician.</p>	<p>Patient portals enable a empowered and engaged patient.</p>
T: Treatment/Clinical	<p>This type of value focuses on effective and improved treatment of patients, reduction in medical errors, inappropriate/duplicate care, increase in safety, quality of care and overall clinical efficiencies. Treatment/Clinical includes types of value such as:</p> <ul style="list-style-type: none"> <li>Efficiencies</li> <li>Quality of Care</li> <li>Safety</li> <li>Other treatment/clinical</li> </ul>	<p>Access to the record from the ED on the 4th DTAP prevented the duplication of this vaccination, information that may not be remembered by the mom or communicated to the original pediatrician. Access to lab results in later stages avoided the administration of boosters that could have been detrimental to the patient's health given his immuno-suppressed condition.</p>	<p>Immunization registries provide a single source for historical data on previously received vaccinations. Having this registry connected across regions allows for movement of patients without fear of loss of data.</p>
E: Electronic Secure Data	<p>This type of value focuses on improved data capture, data sharing, reporting, use of evidence-based medicine, and improved communication by and between physicians, staff and patients. Electronic Secure Data includes types of value such as:</p> <ul style="list-style-type: none"> <li>Privacy &amp; Security</li> <li>Data sharing</li> </ul>		<p>You have to assume the data is secure in order to gain the trust benefits that data provides. If you have confidence in the data provided, you can make a diagnosis using it as a data source. This prevents the need to order a second one, just because.</p>

	Data reporting Enhanced communication		
P: Patient Engagement & Population Management	This type of value focuses on improved population health and reduction in disease due to improved surveillance/screening, immunizations and increased patient engagement due to improved patient education and access to information. Patient Engagement & Population Management includes type of value such as: Patient education Patient engagement Prevention Population Health		The immunization portal allows caretakers to easily access immunization records for schools and colleges as well as gather information about current trends in treatments.
S: Savings	This type of value focuses on documented financial, operational and efficiency savings resulting from factors such as improved charge capture, use of staff resources and workflow and increased patient volume and more efficient use of space .		Insurance aside, patients will see reduced costs as repeated tests and imaging are no longer needed. However, it could be argued that the medical facility may lose revenue by not doing these tests.