Use Case Title: Enabling Cancer Moonshot

Short Description: Sophia is diagnosed with Stage 4 malignant melanoma at an outpatient facility. She is enrolled in Anti-SEMA4D Monoclonal Antibody clinical trial and referred for treatment and infusion immunotherapy. Her biomarkers, cancer staging and treatment is reported to the State Cancer Registry.

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

Participants: Allscripts, B Braun, CDC (State Registry), Epic, Hyland, PRA Health Sciences, SPOK, STANLEY Healthcare

Scenario	Vendor	Products	Standards
Her Dermatologist makes an initial diagnosis and refers Sophia to an Oncologist for a treatment plan. The Dermatologist sends C-CDA to dbMotion, Epic, and cancer event report (Physician Reporting to Public Health Repository-Cancer Registry (PRPH-Ca)) to the State Cancer Registry.	Allscripts	Sunrise	IHE XDR IHE PRPH-Ca
During her visit, Sophia is dehydrated. She is evaluated and treated by her PCP who orders a saline infusion in Sunrise Clinical Manager EMR and sends the parameters to the B Braun pump. The nurse: Receives the order, reviews it, accepts it without changes and starts the infusion All of the infusion statuses then flow directly into the Allscripts EMR for review and signing by the administering nurse.	BBraun	Large Volume Pump and Sunrise	
During the infusion, Sophia leans on her line and causes an occlusion alarm to sound at the pump. The alarm message is immediately delivered to Spok *(via an IHE PCD-04 standard message.)*	Spok	Alarm Manager	

Spok will determine who should receive each notification based on current care team assignments and deliver a per-event notification with proper content and a unique audible tone for priority immediately to the care team members assigned for her care (via a PCD-06 message). The initial message is delivered to the caregiver on their mobile device, which displays the event and details about Sophia in a format that allows for an immediate understanding of what needs to be done. If the caregiver does not respond, this event can be automatically forwarded escalated. this escalation can be based on time limits or if the nurse sees the notification they can escalate themselves by using an option on the mobile device which sends a message back to the AM actor for processing (via a PCD-07 message). Prompt response to this event will ensure patient satisfaction and safety are maintained.			
The State Cancer Registry, represented by the Centers for Disease Control and Prevention (CDC), receives a cancer event report (PRPH-Ca) with information about Sophia's cancer diagnosis from the Dermatologist.	State Cancer Registry (CDC)	eMaRC Plus	IHE PRPH-Ca IHE XDR
Sophia is referred to an oncologist at a different organization for additional diagnostic testing and treatment. The oncologist is able to receive and view summary documents sent by the Dermatologist to ensure continuity of care. During the visit with the oncologist, Sophia has a wide excision of the lesion performed by a surgeon, biomarker test, and a CT scan. The biomarker report is sent to the State Cancer Registry. The images for the CT scan are made available to the oncologist working in Epic through integration with Hyland's Vendor Neutral Archive.	Epic	EpicCare, Beacon, Beaker	IHE XDR IHE ARPH (HL7v2 ORU)
The oncologist orders and views the CT.	Hyland		
Based on the results of those tests, the oncologist is able to stage the cancer, which automatically submits a cancer event report (PRPH-Ca) document to the State Cancer Registry. The oncologist also recommends that Sophia enrolls in a clinical trial that PRA (Nextrials) is managing.	Epic	Beacon, Research	IHE PRPH-Ca IHE RFD
The oncologist will discuss the opportunity to participate in a clinical trial. Enrollment of the patient in the clinical trial will be initiated within Epic and then data collection will begin by opening the	PRA	Prism	IHE RPE IHE RFD IHE Archive

patient Clinical Research Form from PRA inside the Epic interface. Through the Epic interface, Epic will show data pre-population of patient data on the form, and then submit that data for the trial. PRA will show the PRISM EDC interface, reflecting patient data that have been populated and saved within the trial, marked as source. We will also show alternate points of data collection through these same standards directly from devices such as a pulse ox allowing patient data collection at home.. PRA will finish by reviewing the Archive of the transactions, showing the audit history and record of all data sent from the EHR to the clinical research system.			
Sophia arrives for her first cancer treatment appointment. A receptionist checks the patient in, a nurse places the order for the trial medication, and Epic integrates with Stanley and BBraun to successfully administer that medication.	Epic	EpicCare	HL7v2 ADT IHE PCD PIV/IPEC
Stanley receives check-in from Epic, and tracks Sophia with RTLS tag. Thanks to MobileView, staff at the infusion center notice that Sophia has been waiting for 10 minutes past her scheduled appointment time, and bring her back for her infusion. MobileView and Epic both show that the patient has moved to infusion and is no longer waiting.	Stanley	MobileView	HL7v2 ADT
The Clinical Trial medication is ordered. Despite the medication being out of the drug library, the treatment plan is elegantly initiated. Using BarCode Med Administration (BCMA), the Nurse scans the barcodes for the patient, medication, and pump. This information is used to generate a Communication Infusion Order to the pump. This information also generates a failure in the drug the library match. The nurse reviews, accepts, and runs the infusion anyway.	BBraun		

Epic receives the infusion status messages from the pump. This information is put into the eMAR to be reviewed and signed by the administering clinician.			
The hospital staff decides to schedule a Drug Library update for tonight that will include the new investigational drug. The pump sends messages to MobileView containing infusion status as well as the pump's power state (plugged in or running on battery). MobileView will be used to locate all pumps and make sure they are all plugged in, so they can receive the Drug Library update.	B Braun / Stanley		IHE PCD DEC/IPEC/MEMDMC/MEMLS
Upon the completion of the first treatment appointment, the oncologist sends a encounter summary document to dbMotion, where it is made available to Sophia's Dermatologist. Another cancer event report (PRPH-Ca) document is also sent to the State Cancer Registry, which includes information about the cancer treatment.	Epic	EpicCare	IHE XDR IHE PRPH-Ca
The Dermatologist receives a C-CDA from Epic presents the dbMotion EHR agent on top of Sunrise. The agent connects patient records across the community without switching EHRs, so the agent shows data from all potential sources outside of Sunrise.	Allscripts	dbMotion	
The State Cancer Registry, represented by CDC, receives a cancer event report and a biomarker report from the oncologist; these reports provide additional cancer diagnostic and staging information about Sophia's cancer. The State Cancer Registry uses the CDC-developed eMaRC Plus tool to process each of the reports and import them into their central cancer registry database, where the information from the different reports is consolidated into a single record. Once a year, the State Cancer Registry sends aggregated, de-identified data to CDC to contribute to the national cancer data.	CDC	eMaRC Plus	IHE PRPH-Ca IHE XDR IHE ARPH (HL7 2.5.1 ORU)

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Allscripts	Sunrise dbMotion	EHR & HIE	ebXML	IHE ITI	XDR	Content Creator	ITI-41	Send	Sunrise send to dbMotion
			ebXML	IHE ITI	XDR	Content Creator	ITI-41	Send	Sunrise sends to Epic
			CDA	HL7	Reporting to Public Health Cancer Registries	Content Creator	N/A	Send	Sunrise sends to Cancer Registry
			ebXML	IHE ITI	XDR	Document Receiver	ITI-41	Receive	dbMotion receives from Sunrise / Epic

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Epic	EpicCare, Beacon, Beaker, Research	EHR	ebXML	IHE ITI	XDR	Document Source	ITI-41	Receive	Receive CCD from Allscripts
			HL7	N/A	N/A	N/A	ORU	Receive	Receive Image Availability link from Hyland
			HL7	N/A	N/A	N/A	ORU	Send	Send Pathology Report to Cancer Registry

			HTTP	IHE ITI	RFD	Form Filler	ITI-34	Send	Retrieve Form from PRA
			CDA	IHE QRPH	CRD	Content Creator	N/A	Create	Pre-pop form in PRA
			CDA	HL7	Reporting to Public Health Cancer Registries	Content Creator	N/A	Create	Send to Cancer Registry
			ebXML	IHE ITI	XDR	Document Receiver	ITI-41	Receive	Send CCD to Allscripts
			HL7	N/A	N/A	N/A	ADT	Send	Send patient arrival message to Stanley
			HL7	IHE PCD	PIV	Infusion Order Programmer	PCD-03	Send	Send to BBraun
			HL7	IHE PCD	DEC	Device Observation Consumer	PCD-01	Receive	Receive from BBraun
			HL7	IHE PCD	IPEC	Device Observation Consumer	PCD-10	Receive	Receive from BBraun

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description

BBraun	DoseLink		HL7	IHE PCD	PIV	IOC - Infusion Order Consumer	PCD-03	Recieve	***Epic EMR sends infusion order message to pump***
			HL7	IHE PCD	DEC	DOR - Device Object Reporter	PCD-01	Send	Pump sends periodic infusion status message to Epic EMR
			HL7	IHE PCD	IPEC	DOR - Device Object Reporter	PCD-10	Send	Pump sends event driven infusion status message to Epic EMR
			HL7	IHE PCD	ACM	AM - Alarm Reporter	PCD-04	Send	Pump Sends Alert/Alarm to the Spok Alarm Manager (AM)
BBraun	DoseLink		HL7	IHE PCD	MEM-LS	LOC - Location Observation Consumer	PCD-16	Receive	Stanley MobileView sends pump location to B Braun. Shows up in DoseTrac and passes location on to AM and EMR.
BBraun	DoseLink		HL7	IHE PCD	MEM-DMC	DMIR - Device Mgmt Info Reporter	PCD-15	Send	Send pump status to Stanley (running on AC or battery; battery level)

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STANLEY Healthcare	MobileView		HL7	IHE PCD	MEM-LS	LOR - Location Observation Reporter	PCD-16	Send	Send pump location to B Braun
			HL7	IHE PCD	MEM-DMC	DMIC - Device Mgmt Info Consumer	PCD-15	Receive	Receive pump device status (power/battery) from B Braun
			HL7	IHE PCD	DEC, IPEC	DOC - Device Object Consumer	PCD-01, PCD-10	Receive	Receive pump infusion status updates from B Braun
			HL7	ANSI	HL7v3		PRRG	Send	Send patient location to Epic

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Hyland	NilRead/Acuo	Enterprise Image Viewing	HL7	IHE	RAD	Image Manager	RAD-49	Send	Notify EHR of available Study.
			DICOM	IHE	RAD	Image Display Actor	RAD-14	Receive	Display images from the DICOM Archive (VNA)
			DICOM	IHE	RAD	Evidence Creator	RAD-18	Send	Send updated DCM files to the DICOM Archive (VNA)

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Cancer Registry (CDC)	eMaRC Plus	Public Health	N/A	IHE QRPH	PRPH-Ca	Content Consumer	N/A	Receive	Discrete Data Import
			ebXML	IHE ITI	XDR	Document Recipient	ITI-41	Receive	Provider and Register Document Set-b
			N/A	IHE PaLM	IHE ARPH	Report Receiver	N/A	Receive	Public Health Reporting