



Use Case Title: Safe Medication Practice

Short Description: Richard has a history of pulmonary hypertension and congestive heart failure and had a recent syncope that resulted in a fall. He complains of pain and is unable to stand on his leg, so he is taken to the hospital ED. He undergoes a radiological exam, which is positive for leg fracture and requires surgery. Richard is tracked across care areas. Antibiotic, pain and cardiovascular medications are ordered. A connectivity platform optimizes formulary management and data exchange, protecting against medication errors and supporting diversion detection.

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

Participants: BD, Epic, Spok, STANLEY

Scenario	Vendor	Product	Standards
Richard Hawkins is a 60-year-old that has a history of pulmonary hypertension, congestive heart failure and recent syncope. After a fall, he is unable to move his leg so he is taken to the hospital ED.		NA	N/A
After ED triage, Richard receives a Medical Screening Exam. Findings include confusion, leg pain, impaired mobility, and a penicillin allergy. A physical exam indicates leg fracture. Diagnosis is confirmed with radiograph. The physician orders immediate surgery and a prophylactic dose of an antibiotic. The nurse assigns Richard aRTLS badge through the EMR.	STANLEY Healthcare		N/A
The badge is tied to Richard’s patient record and sends location data to the EMR.	STANLEY Healthcare/Epic	MobileView	ADT & RTLS HL/7
Upon entering Pre-Op, Epic’s OpTime board automatically shows Richard’s location and milestone update as Pre-Op.	STANLEY Healthcare/Epic	MobileView	RTLS HL/7

After prep, Richard is then sent to the OR for surgery. OpTime is automatically updated as Richard enters the OR.	STANLEY Healthcare/Epic	MobileView	RTLS HL/7
After surgery, the physician orders multiple medications, including PCA morphine and an IV antibiotic, for Richard and he is taken to the step down floor so he can be closely monitored.	STANLEY Healthcare/Epic	MobileView Epic – CPOE BD HealthSight™ Data Manager	RTLS HL/7
Pharmacy reviews and approves medication orders in the pharmacy information system (PIS). Various technologies receive the order information including the IV compounding system, dispensing cabinets, and IV Pump. Richard is started on the IV antibiotic, and the antibiotic is changed after an alert on BD HealthSight Viewer indicates that another antibiotic would be more effective.	BD	BD Pyxis™ Enterprise Server BD Pyxis™ MedStation™ ES system BD HealthSight™ Viewer Epic - PIS	HL/7
Pharmacy accesses the IV antibiotic order, compounds it and sends it out for delivery to Med/Surg floor.	BD	BD Pyxis™ IV Prep BD HealthSight™ Track & Deliver Epic - EHR	HL/7
The nurse remotely tracks delivery of the compounded medication (antibiotic) from the pharmacy and sees where it has been delivered. The nurse queues PCA morphine syringe at the workstation on wheels (WOW) for removal from the cabinet.	BD	BD Pyxis ES™/Epic interoperability	FHIR
The nurse retrieves compounded medication (antibiotic) from the delivery location, and removes queued PCA morphine syringe from cabinet.	BD	BD Pyxis™ MedStation™ ES system BD Pyxis™ ES Refrigerator with Helmer Access Technology	HL7
The nurse accesses the RTLS dashboard from mobile device to locate a clean, available infusion PCA pump module to add on to an infusion pump that already has an LVP pump module. The nurse sees the nearest PCA pump module is in use and identifies another one that is available in clean utility closet. The nurse gets available, clean PCA pump module and attaches it to pump.	BD	BD Alaris™ Asset Management BD Alaris™ System MobileView	IHE

<p>The nurse initiates PCA infusion and antibiotic via smart pump/EMR interoperability (sends orders to LVP and PCA modules).</p> <p>Infusion status data are sent to EMR. Pump sends message to MobileView that it is in use.</p> <p>The nurse validates data which are then documented in patient's EMR record.</p>	BD	BD Alaris EMR interoperability BD Alaris System Epic Reporting Dashboard	IHE
<p>The antibiotic infusion becomes occluded because the patient bends his arm at the IV site. The pump is automatically paused, which generates an Occlusion Alarm that is delivered to Spok via a PCD-04 standard message from BD. 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 Richard's care (via a PCD-06 message). The initial message is delivered to the caregiver on their Epic Hyperspace Dashboard, which displays a pop-up of the event and details about the patient.. If the caregiver is not at the dashboard, this event can be automatically forwarded to his/her mobile device, and then escalated based on time limits or staff response. Prompt response to this event will ensure patient satisfaction and safety are maintained.</p>	BD	BD Alaris EMR interoperability Spok Alert Manager Epic Hyperspace app (real-time notification)	IHE
<p>Via a BD HealthSight™ Viewer display in the Pharmacy, the pharmacist sees a continuous infusion for Richard is running low. She acknowledges the dose and adds it to the IV compounding queue, reinitiating the compounding, tracking, delivery and administration workflow.</p>	BD	BD HealthSight™ Viewer (Continuous Infusion view)	HL7, FHIR
<p>The physician discontinues the PCA and orders an oral pain med. The nurse will need to waste the remaining medication. The nurse removes the PCA and wastes the extra narcotic. The information on Queue and Waste is recorded and available for Diversion tracking.</p>	BD	BD HealthSight™ Diversion Management BD Pyxis™ Med Link Queue & Waste	HL7

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
EPIC	E H R	EMR	HL7	IHE PCD	PIV	IOP	PCD-03	Send	Receive infusion parameters and pre-populate pump
			HL7	IHE PCD	DEC	DOC	PCD-01	Receive	Communicate infusion status updates to EMR
			HL7	IHE PCD	IPEC	DOC	PCD-10	Receive	Communicate infusion status start to EMR
			HL7 v2.x	NA	NA	NA	NA	Send Receive	Send ADT allergy info, med concentration volume, strength (V2.x RDE) Receive inventory and dispense (RDS)
			HL7 FHIR	NA	NA	NA	NA	Send	Single Sign On Send patient context
			HL7	NA	NA	NA	NA	Send	Send clinical results. NSHN reporting via CDA
			HL7	NA	NA	NA	NA	Send Receive	Send order (RDE) Communicate dispense (RDS)
			HL7	NA	NA	NA	NA	Send	Send order, ADT, infusion status
			WCTP	IHE PCD	ACM	AC	PCD-06	Receive	Receive alarms message from AM
BD	Pyxis IV Prep	IV compounding	HL7	NA	NA	NA	NA	Receive Send	Receive order (RDE) Communicate dispense (RDS)
Stanley	STANLEY MobileView Asset Management	Real-Time Location System	HL7	IHE PCD	IPEC/DEC	DOC	PCD-10/ PCD-01	Receive	Receive infusion status from pump to identify location of clean pump
Stanley	STANLEY MobileView Patient Flow	Real-Time Location System	HL7 v3	NA	NA	NA	NA	Receive Send	Receive RTLS patient tag/badge assignment from Epic Send RTLS patient location update to Epic
BD	BD Alaris	Infusion pump	HL7	IHE PCD	PIV	IOC	PCD-03	Receive	Receive infusion parameters to pre-populate pump programming
			HL7	IHE PCD	DEC	DOR	PCD-01	Send	Communicate observations to EMR (periodic)
			HL7	IHE PCD	IPEC	DOR	PCD-10	Send	Infusion progress and status updates (event)

			HL7	IHE PCD	ACM	AR	PCD-04	Send	Communicates alarm message to AM
Spok	Care Connect	Alarm Manager	HL7	IHE PCD	ACM	AM	PCD-04	Receive	Receive alarm messages from AR
			WCTP	IHE PCD	ACM	AM	PCD-04	Send	Send alarms message to AC
BD	BD Pyxis ES system (BD Pyxis MedStation ES, BD Pyxis Med Link Queue & Waste)	Automated med dispensing	HL7	NA	NA	NA	NA	Receive Send	Receive ADT allergy info, med concentration volume, strength (V2.x RDE) Send inventory and dispense (RDS)
		Nursing mobility solution	HL7 FHIR	NA	NA	NA	NA	Receive	Single Sign On Receive patient context
BD	BD HealthSight™ Viewer	Repository / Analytics	HL7 FHIR	NA	NA	NA	NA	Receive	Receive order, ADT, infusion status