



Use Case Title: Labor and Delivery

Overview: Ariana, a 40-year-old, is pregnant. She has a history of arrhythmia so hers is a high-risk pregnancy. She arrives at the hospital for delivery ahead of her due date. Prior to delivery, she undergoes monitoring and prenatal monitoring. When she is ready to deliver, she is transferred to a delivery suite. During labor, physiologic monitoring and infusion of medication occurs to improve the outcome for both mother and child. Ariana’s newborn is slightly premature, with underdeveloped lungs, and is monitored in the NICU. Insertion of a chest tube is needed. Informed consent is required and is electronically obtained.

Value: Making the birthing summary and antepartum reports readily available for follow up visits with both the OBGYN and the new pediatrician helps transition to the next stage in care for a newborn. Interoperability drives STEPS to value by tracking birth abnormalities and improving the health of a population.

Scenario	Vendor	Products	Standards
Ariana is a pregnant 40 year old. She has a history of arrhythmia so her pregnancy is high risk. She arrives at the hospital for monitoring ahead of her due date.			
Prior to delivery her unborn child undergoes prenatal physiology monitoring and the vital signs are recorded.	OBIX	OBIX Perinatal Data System	HL7 v2 IEEE 11073
Ariana also undergoes physiologic monitoring to monitor her vital signs as well.	GE	CARESCAPE Connect	HL7 v2 IEEE 11073
When she is ready to deliver she is transferred to a delivery suite. Ariana is transferred from Antepartum to the Birthing Suite which triggers a patient administration transfer message.	Epic	Epic	HL7 v2
During labor, physiologic monitoring of Ariana takes place. Single Sign On allows access from one system within another system. Continuous monitoring is maintained while in the Birthing Suite. Maternal and Fetal patients are monitored via fetal monitor. Charting of	OBIX	OBIX Perinatal Data System	HL7 v2 IEEE 11073

labor is entered into the system by clinical staff. Tracing can be viewed remotely at the bedside and the Central Nurses Station.			
Medication is infused to improve the outcome for both mother and child.	ICU Medical	Plum 360	HL7 v2 IEEE 11073
Our newborn is slightly premature with underdeveloped lungs and is monitored in the neonatal intensive care unit.			
As our baby is being monitored, it becomes apparent that she needs a chest tube inserted. Using a tablet, the nurse scans the baby's ID band to bring up the correct form for the procedure. After discussion with baby's mother, the form is completed and signed by the provider, nurse and mom.	FormFast	FormFast Capture	HL7 v2
All alerts are received by the alert management system. The appropriate staff is notified on the appropriate communication device.	Masimo	Patient SafetyNet	HL7 v2 IEEE 11073 WCTP
Alert text messages are sent to the alert communicator system for determining the appropriate protocol to use to send to the communication device.	Epic	Epic	WCTP
While in the NICU physiologic data from multiple devices is aggregated into the patient record.	Masimo	Root with Radical-7	HL7 v2 IEEE 11073
At the end of their stay in the hospital billing records are captured for both mother and newborn. A billing statement for patient and baby over the last month is communicated.	Health Payment Systems	SuperEOB	X12 EDI 835

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
<i>Patient admission</i>									
Epic	Epic	Admit	HL7 v2	IHE	PAM		ADT A01	Send	Patient admission
OBIX	OBIX Perinatal Data System	Admit	HL7 v2	IHE	PAM		ADT A01	Receive	Patient admission
GE	CARESCAPE Connect	Admit	HL7 v2	IHE	PAM		ADT A01	Receive	Patient admission
<i>Prenatal physiologic monitoring</i>									
OBIX	OBIX Perinatal Data System	Physiologic observations	HL7 v2				ORU R01	Send	Communicate patient care device observations
Epic	Epic	Physiologic observations	HL7 v2				ORU R01	Receive	Communicate patient care device observations include in patient record
<i>Mother physiologic monitoring</i>									
GE	CARESCAPE Connect	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC+W CM	DOR	PCD-01	Send	Communicate Patient Care Device Data periodic and event driven with waveform data
Epic	Epic	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC+W CM	DOC	PCD-01	Receive	Communicate Patient Care Device Data include in patient record

Mother physiologic monitoring alerting									
GE	CARESCAPE Connect	Alert	HL7 v2 IEEE 11073	IHE	ACM	AR	PCD-04	Send	Report alert High heart rate
Masimo	Patient SafetyNet	Alert	HL7 v2 IEEE 11073	IHE	ACM	AM	PCD-04	Receive	Report alert
Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-06	Send	Disseminate Alert to primary recipient
Epic	Epic	Alert	WCTP	IHE	ACM	AC	PCD-06	Receive	Disseminate Alert to alert dashboard
Epic	Epic	Alert	WCTP	IHE	ACM	AC	PCD-07	Send	Report Dissemination Alert Status
Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-07	Receive	Report Dissemination Alert Status
Patient transfer									
Epic	Epic	Admit	HL7 v2	IHE	PAM		ADT A02	Send	Patient transfer antepartum monitoring to birther suite
OBIX	OBIX Perinatal Data System	Admit	HL7 v2	IHE	PAM		ADT A02	Receive	Patient transfer
Mother and prenatal physiologic monitoring									
OBIX	OBIX Perinatal Data System	Physiologic observations	HL7 v2				ORU R01	Send	Communicate patient care device observations
Epic	Epic	Physiologic observations	HL7 v2				ORU R01	Receive	Communicate patient care device observations include in patient record
Infusion program									
Epic	Epic	Infusion program	HL7 v2 IEEE 11073	IHE	PIV	IOP	PCD-03	Send	Communicate Infusion Order oxytocin

ICU Medical	Plum 360	Infusion program	HL7 v2 IEEE 11073	IHE	PIV	IOC	PCD-03	Receive	Communicate Infusion Order receive order and program pump
ICU Medical	Plum 360	Infusion program	HL7 v2 IEEE 11073	IHE	PIV	IOC	PCD-03 App Ack	Send	Acknowledge of Communicate Infusion Order clinician optionally modifies then accepts program program updates send back to programmer
Epic	Epic	Infusion program	HL7 v2 IEEE 11073	IHE	PIV	IOP	PCD-03 App Ack	Receive	Acknowledge of Communicate Infusion Order include in patient record
<i>Infusion observations to patient record</i>									
ICU Medical	Plum 360	Infusion observations	HL7 v2 IEEE 11073	IHE	DEC	DOR	PCD-01	Send	Communicate Patient Care Device Data periodic and event driven
Epic	Epic	Infusion observations	HL7 v2 IEEE 11073	IHE	DEC	DOC	PCD-01	Receive	Communicate Patient Care Device Data include in patient record
<i>Infusion progress to patient record</i>									
ICU Medical	Plum 360	Infusion progress	HL7 v2 IEEE 11073	IHE	IPEC	DOR	PCD-10	Send	Communicate Infusion Event Data periodic and event driven
Epic	Epic	Infusion progress	HL7 v2 IEEE 11073	IHE	IPEC	DOC	PCD-10	Receive	Communicate Infusion Event Data include in patient record
<i>Infusion alert communication</i>									
ICU Medical	Plum 360	Alert	HL7 v2 IEEE 11073	IHE	ACM	AR	PCD-04	Send	Report Alert cassette door open
Masimo	Patient SafetyNet	Alert	HL7 v2 IEEE 11073	IHE	ACM	AM	PCD-04	Receive	Report Alert

Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-06	Send	Disseminate Alert to primary recipient
Epic	Epic	Alert	WCTP	IHE	ACM	AC	PCD-06	Receive	Disseminate Alert to alert dashboard
Epc	Epic	Alert	WCTP	IHE	ACM	AC	PCD-07	Send	Report Dissemination Alert Status
Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-07	Receive	Report Dissemination Alert Status RogersJim@nextrials.com BarrRobert@nextrials.com
Physiologic monitoring aggregation									
GE	CARESCAPE Connect	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC	DOR	PCD-01	Send	Communicate Patient Care Device Data periodic and event driven
OBIX	OBIX Perinatal Data System	Physiologic observations	HL7 v2				ORU R01	Send	Communicate patient care device observations
Masimo	Root with Radical-7	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC	DOR	PCD-01	Receive	Communicate Patient Care Device Data include in aggregated data for display
Masimo	Root with Radical-7	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC	DOR	PCD-01	Send	Communicate Patient Care Device Data include in aggregated data for display
Epic	Epic	Physiologic observations	HL7 v2 IEEE 11073	IHE	DEC	DOC	PCD-01	Receive	Communicate Patient Care Device Data include in patient record
Alerting from physiologic aggregation									
Masimo	Patient SafetyNet	Alert	HL7 v2 IEEE 11073	IHE	ACM	AR	PCD-04	Send	Report alert Oxygen saturation
Masimo	Patient SafetyNet	Alert	HL7 v2 IEEE 11073	IHE	ACM	AM	PCD-04	Receive	Report alert

Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-06	Send	Disseminate Alert to primary recipient
Epic	Epic	Alert	WCTP	IHE	ACM	AC	PCD-06	Receive	Disseminate Alert to alert dashboard
Epc	Epic	Alert	WCTP	IHE	ACM	AC	PCD-07	Send	Report Dissemination Alert Status
Masimo	Patient SafetyNet	Alert	WCTP	IHE	ACM	AM	PCD-07	Receive	Report Dissemination Alert Status
<i>Chest tube approval form for newborn</i>									
Epic	Epic	Form	HL7 v2	IHE	ITI	PAM	ADT A01	Send	Admit of newborn
Epic	Epic	Form	HL7 v2				ORM 001	Send	Order for chest tube
FormFast	FormFast Capture	Form	HL7 v2				ADT A01	Receive	Admit OF newborn
FormFast	FormFast Capture	Form	HL7 v2				ORM 001	Receive	Order for chest tube
FormFast	FormFast Capture	Form	HL7 v2				MDM	Send	Send approved form
Epic	Epic	Form	HL7 v2				MDM	Receive	Send approved form
<i>Communicate billing information for mother and newborn</i>									
Epic	Epic	Billing	X12	EDI			835	Send	Billing information for mother and baby over last month
Health Payment Systems	SuperEOB	Billing	X12	EDI			835	Receive	Billing information for mother and baby over last month

HIMSS Value STEPS Framework:

Step	Description	Point of View	Point of View	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"> Patient satisfaction Provider satisfaction Staff satisfaction Other satisfaction 	<p>Patient satisfaction is increased by understanding the process and being informed in real time.</p>	<p>Patient satisfaction and ease: understanding process and care taken of premature baby</p>	<p>Billing consolidation allows patients to understand all the costs involved in their various medical stays in a single source.</p>	<p>Reduction in infusion programming errors due to automation Reduction in medication management liability Infusion programming automation eases infusion programming process Communication of alerts to staff keeps staff informed when they are not within earshot of patient devices in rooms behind closed doors</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"> Efficiencies Quality of Care Safety Other treatment/clinical 			<p>Alert communication to first and second tier providers keeps clinicians on top of changes that are occurring with the patient. Ability to remotely monitor patients can allow for clinicians to keep a closer eye, while not physically being present.</p>	<p>Infusion programming automation reduce time to program pumps Infusion programming automation reduces medication administration errors A reduction in medication administration errors improves patient safety Alerts go to staff communication devices which reduce expectations of staff to hear alerting audio indications at distance or behind closed doors.</p>

<p>E: Electronic Secure Data</p>	<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: Privacy & Security Data sharing Data reporting Enhanced communication</p>		<p>Data capture and sharing between systems allows for viewing of vitals in common repository.</p>	<p>Making the birthing summary and antepartum reports readily available for follow up visits with both the OBGYN and the new pediatrician helps transition to the next stage in care for a newborn.</p>	<p>Observational data from devices and infusion progress is captured into patient record.</p>
<p>P: Patient Engagement & Population Management</p>	<p>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</p>	<p>In case of long-term monitoring outside the clinic it's important to provide patient with easy to understand reference material (e.g. step-by-step guide, best</p>	<p>Keep track of population health in regards to premature births.</p>	<p>Tracking birth abnormalities within a population.</p>	<p>Anonymized patient records containing orders, device observations, infusion progress, patient physiologic trends while under infusion, equipment and staff movements, alerts and responses to them, and alert counts for fatigue evaluation are all available for retrospective analysis so as to improve the care of patients over time and to assure efficiency and accuracy of staff actions.</p>

	includes type of value such as: Patient education Patient engagement Prevention Population Health	with images) and automatic reminders.			
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.	Provides alert historical information for staff fatigue avoidance which improves efficiencies.