Use Case Title: Mother and Baby Care: Continuity Along the Journey

Short Description: In the months leading up to the arrival of her baby, Jenny works with her OBGYN for essential maternal health and pre-natal care, including coordinating her birth plan and managing her gestational diabetes. Jenny catches up on her immunizations and is prepared for her planned delivery at a birthing center. The OBGYN coordinates with the birthing center to ensure seamless continuity of care for her planned delivery. Jenny's labs, immunizations and conditions are available to facilitate care in the birthing center. Baby James arrives without complications. He receives initial immunizations and undergoes a variety of newborn screens during his stay. After struggling with some of the screenings, his condition is documented and he is referred for a check up to retest. The birthing center sends James' information to jurisdictional vital records, who can then file the birth certificate and are able to start the process to provide him a Social Security number. Jenny brings James to his newborn visit. The clinic retrieves James' vaccination information from the registry and the documentation of his condition from the birthing center. They retest his screening and he passes. After the visit, Jenny is able to review James' immunization history on her smart phone.

Value Statement: The healthcare journey for mother and baby, both pre- and post-natal, can often require coordination across care teams and locations. Through the use of international interoperability standards, we are able to demonstrate seamless care for both mother and child between systems, allowing new and established care team members to keep up-to-date on key clinical insights and to better coordinate.

Participating Organizations: Epic, Oracle Health, Genesis, STC

Scenario	Vendor	Products	Standards
Introduction The anticipated arrival of a mother's first baby can be an exciting journey. Pre-natal and post-natal care for mom and baby are essential to managing outcomes for both patients, positively impacting their short- and long-term health. When patients face challenges in communicating with their providers, interoperability can serve an important function in patient-provider and provider-provider care coordination and planning, increasing transparency and collaboration to support a patient's wishes, avoid miscommunication, and prevent duplicative diagnostics or care.	Genesis	N/A	N/A

In our scenario today, we pick up with Jenny in the 3rd trimester of her pregnancy, and follow her as she welcomes baby James and works with providers for essential newborn care. We'll discuss how key prenatal and postnatal information is rapidly transmitted to facilitate the coordination and prioritization of time-sensitive care for both mom and baby.			
Jenny's OB/GYN refers her to her preferred birthing center Jenny is a 33 year old patient and member of the deaf community, who is about to become a mom for the first time. Jenny has had challenges in the past communicating with providers because she often has to rely on written communication or a family member joining her for appointments. She is pleased to have found an OB/GYN who has embraced interoperability to gain access to her healthcare history both before and outside of the practice, and she has chosen to remain under the care of this provider for the majority of her prenatal care. Leveraging the Immunization Query function of Cerner's Immunizations Hub, her OB/GYN is able to check the state registry and see Jenny's immunization history. Her provider is able to see that Jenny has kept up-to-date on her COVID vaccinations and also received her TDaP elsewhere in the past. However, Jenny has not received her annual flu vaccination; the OB/GYN discusses the importance of the missed vaccination and Jenny agrees to receive this vaccine. Once administered, a message reporting this immunization is automatically sent to the State Immunization registry being served by STC. It was previously determined that Jenny has gestational diabetes but it is well-managed so her OB/GYN does not feel there are risks with Jenny's desire to deliver her baby at the Birthing Center. In previous discussions, Jenny had expressed a desire to deliver her baby at the Birthing Center in her hometown so she can be near her parents. Her OB/GYN feels that Jenny's pregnancy is low-risk and is happy to refer her to the Birthing Center for the final weeks of her pregnancy. Post appointment, a Transfer of Care CCD is sent via Direct Messaging to the Birthing Center care team in advance of Jenny's arrival in her hometown.	Oracle Health	Immunizations Hub Direct HISP	HL7 v2 VXU/QBP Direct Secure Messaging

Jenny Arrives at the birthing Center After beginning labor, Jenny is admitted to the Birthing Center in her hometown. The birthing center provider is able to access her chart that was provided during her transfer of care, and the prenatal clinical data that was documented by her OB/GYN. The birthing center also wants to make sure that her vaccines are up to date, and performs a query to the immunization registry. This allows all of her historical immunization to be reconciled on her chart, including the annual flu vaccination that was just administered at her last appointment with her OB/GYN. Jenny gives birth to a healthy baby boy James with no complications. His information is documented on his chart in the Birthing Center.	Epic	Immunizations Hub	HL7 v2 VXU/QBP
Reporting James's birth with no complications The birth clerk at the hospital has the responsibility to register the birth of the newborn. To save time, and provide greater accuracy, the birth clerk can open the SMART on FHIR app within the EMR to transfer the data from the EMR to the Vital Records Registration System. Within the Vital Record Registration system, the rest of the socioeconomic data will be gathered from the Mother's Worksheet so the record can be released for registration. This system allows the new parents to secure a birth certificate for the child faster. The application also connects to SSA to secure a social security number for the newborn. After registration of the record, the state user sends the data to NCHS for epidemiological purposes. This is capable of being sent through a FHIR transmission for faster reporting.	Genesis		FHIR R4 SMART on FHIR
Newborn bilirubin screening The provider at the Birthing Center performs a routine bilirubin test on baby James. Based on the results, the provider finds that baby James has elevated Bilirubin levels. To dig in deeper and identify the appropriate treatment, the provider uses the SMART on FHIR	Epic		FHIR R4 SMART on FHIR

bilirubin management app created by Utah University. The provider determines phototherapy to be the best course of action for James and administers the treatment. After baby James' bilirubin levels return to a normal range, Jenny and James are ready to be discharge. The birthing center provider know Jenny intends to resume care in the same area as where she received prenatal care, so the provider sends a transfer of care CCD for baby James to his pediatrician.			
James meets his pediatrician After returning home, it's time for Jenny to take James in for his first appointment with his new pediatrician. Jenny is tired from her first month of sleepless nights and having difficulty remembering everything from James's delivery at the Birthing Center. Using Oracle Health's cloud-based HIE Resonance to query CommonWell & CareQuality participants, the pediatrician is able to find data from James's encounter(s) at the Birthing Center. Using Seamless Exchange, the externally sourced data is auto-ingested into the EMR, including James's Newborn Screening Results, Immunizations, Problem(s), and Vitals. The pediatrician sees the out-of-range bilirubin levels from Epic's Birthing Center and the corresponding procedure for light therapy. James seems to be progressing well after his light therapy, so his pediatrician feels no further intervention is needed. James's doctor also sees that he received his 1st Hepatitis B immunization at the Birthing Center, so with Jenny's consent he proceeds with administering James' 2nd Hepatitis B immunization, which is automatically reported to the State Immunization Registry being served by STC via the Oracle Health Immunization Hub.	Oracle Health		XCPD/XCA FHIR R4 HL7 v2 VXU
As we come to a close in this chapter of Jenny's story: Jenny plans to travel with baby James and spend some much needed time with family and friends in her hometown, a looming concern overwhelms her that she might miss key vaccinations for James while on travel.	STC	MYIR	HL7 v2 QBP/VXU

To alleviate this concern, Jenny recalls that on the last pediatrician visit she is reminded that she opted to sign up with STC's MYIR immunization Consumer Portal. Upon logging in, a seamless HL7 V2 query is sent for her and James to pull in their immunization records from the state immunization registry. Jenny is able to see her and James immunization history along with the forecast indicating the dosage window for all of Jame's future immunizations and the forecasted date for each. This empowers Jenny to line up her vacation time frame around the forecasted date for James additional immunizations.			
Conclusion Interoperability standards support the timely sharing of clinical information that can directly impact patient care and allow providers to support patients' wishes while managing health risks and unforeseen challenges in the healthcare journey. Through the seamless exchange of health data, providers have the opportunity to improve patient outcomes and experience, saving provider and patient time, reducing costs, and ensuring smooth coordination of patient-centered care.	STC	N/A	N/A

Data Exchange Standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Oracle Health	Immunization Hub	Data Exchange	HL7	IHE PCD	ACM	Care Team	QBP/VXU	Send and Receive	Immunization Query/Update
	Direct HISP	Data Exchange	SMTP	Direct Trust	HISP	Care Team	Direct Secure Email	Send	ToC CCD
	Resonance	Data Exchange	HTTPS	IHE	XDS	Initiating Gateway	ITI-41/ITI-43	Send and Receive	Exchange CDAs

	Seamless Exchange	Data Usability	IHE/FHIR	IHE	CCD	Care Team	FHIR/CCD/HL7/Direct Message	Receive	Ingestion of Data
Epic	EpicCare	Electronic Health Record	SMTP	Direct Trust	HISP	Birthing Center Care Team	Direct Secure Email	Receive	ToC CCD
			HL7	IHE	ACM	Birthing Center Care Team	QBP/VXU	Send and Receive	Immunization Query/Update
			HL7	IHE	BFDR	Birth Clerk	Smart-on-FHIR	Send and Receive	Fetal Vital Records
			HL7	IHE	STU3	Birthing Center Care Team	Smart-onFHIR	Send and Receive	Newborn Bilirubin Management
			IHE	IHE	XCPD	Outpatient Care Team	Common Well-Carequality	Send	ToC
STC	IWEB/MYIR	Imms/ConsumerApp	HL7	IHE PCD	ACM	QBP/VXU	QBP/VXU	Send and Receive	Immunization Query/Update
			HL7	IHE PCD	ACM	QBP/VXU	QBP/VXU	Send and Receive	Immunization Query/Update
Genesis	State Vital Records Systems	Vital Record Registration	HL7 International	Public Health Workgroup	BFDR	Birth Clerk	Smart-on-FHIR	Receive	Electronic Medical Record data transfer
			HL7 International	Public Health Workgroup	BFDR	State Health Department	FHIR R4	Send	NCHS reporting

References: