Test Plan Summary

CDC No Query Support - Immunization Related Requirements Test Plan (CNI) v4

Test Case Group: Initial Data Load

The initial Data load will consist of the vendor entering data during live interactive testing for 4 patients with various scenarios. The data entry will include demographic data, Immunization histories and specific conditions for each patient.

Test Case	Juana Mariana Gonzales Initial Data Load

Description:

The practice site for the scenario is Shoreline Pediatrics. The EHR vendor loads demographic data and clinical history for Juana Mariana Gonzales. The data includes immunizations provided by the practice.

The vendor also enters:

- Two vaccines administered at other sites
1) an influenza vaccine given at a local pharmacy
2) an inactivated polio vaccine given elsewhere and not reported to the registry - the history includes an adverse reaction (febrile seizure) 8 hours after the vaccine was administered

- Adverse reaction to inactivated polio vaccine (febrile seizure) and the date and source of information

- Allergy to egg albumin administered at this site (the registry has different CVX date and lot number information for this vaccine)

NOTE: the historical vaccines will be manually entered in this Test Case rather than importing during the Registry query to establish the correct immunization history in the patient record in support of subsequent test cases.

Test Steps	
Enter Initial Demographic Data for New Patient Juana Mariana Gonzales, 6-year old	**Description:** **The EHR vendor loads demographic data for Juana Mariana Gonzales.** **Test Objectives:** ***Register New Patients:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The**

	information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.
Enter Initial Immunization Data for Juana Mariana Gonzales: Immunizations from practice	**Description:** **The EHR vendor loads immunization history data from the local practice for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.** **Supporting data for:** ***Compare Public Health Immunization Registry (IIS) Immunization History to EHR Immunization History:*** **The public health immunization registry has returned the requested immunization history for a patient. The EHR is able to display the immunization history received from the registry as well as the immunization history already present in the EHR so that a user can compare them. The EHR provides a way for the provider to view both histories, determine what is different (if anything), and update the existing EHR immunization history with new information from the public health registry if he or she chooses to do so. The system must store the new information as structured data as part of the patient's local immunization history and include the time of the update and the source of the new information.**
	Description: **The EHR vendor loads immunization history data from another practice into the record for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system**

Enter Initial Immunization Data for Juana Mariana Gonzales from Another Practice	**allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.** **Supporting data for:** ***Compare Public Health Immunization Registry (IIS) Immunization History to EHR Immunization History:*** **The public health immunization registry has returned the requested immunization history for a patient. The EHR is able to display the immunization history received from the registry as well as the immunization history already present in the EHR so that a user can compare them. The EHR provides a way for the provider to view both histories, determine what is different (if anything), and update the existing EHR immunization history with new information from the public health registry if he or she chooses to do so. The system must store the new information as structured data as part of the patient's local immunization history and include the time of the update and the source of the new information.**
Enter Initial Immunization Data for Juana Mariana Gonzales Reported by Parent	**Description:** **The provider enters immunization data from a pharmacy as reported by the parent for Juana Mariana Gonzales.** **Test Objectives:** **Record Past Immunizations: The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.** **Supporting data for:** ***Compare Public Health Immunization Registry (IIS) Immunization History to EHR Immunization History:*** **The public health immunization registry has**

	returned the requested immunization history for a patient. The EHR is able to display the immunization history received from the registry as well as the immunization history already present in the EHR so that a user can compare them. The EHR provides a way for the provider to view both histories, determine what is different (if anything), and update the existing EHR immunization history with new information from the public health registry if he or she chooses to do so. The system must store the new information as structured data as part of the patient's local immunization history and include the time of the update and the source of the new information.
Enter Adverse Reaction to the Polio Vaccine	**Description:** **The provider documents in the EMR the clinical history of an adverse reaction to the polio vaccine.** **Test Objectives:** **Supporting data for:** ***Identify Adverse Event:*** **The EHR or other clinical software system enables capture of structured data regarding adverse events.**
Enter allergy to egg albumin	**Description:** **The provider documents in the EMR the clinical history of an allergy to egg albumin.** **Test Objectives:** **Supporting data for:** ***Modify Antigen Recommendations Based on Allergy History:*** **The system notifies the provider of any conflicts between recommended vaccines in the updated forecast and the patient's active allergies.**
Enter HepB Dose1 and 3 of 3	**Description:** **The EHR vendor loads HepB immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for**

	Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.
Enter DTaP Doses 1, 2, 3 and 4 of 5	**Description:** **The EHR vendor loads HepB immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Hib Doses 1-4 of 4	**Description:** **The EHR vendor loads Hib immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
	Description: **The EHR vendor loads Polio immunization history data for Juana Mariana Gonzales.**

Enter Polio Dose1 and 2 of 4	**Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Pneumococcal,Doses 1-4 of 4	**Description:** **The EHR vendor loads Pneumococcal immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Rotavirus Dose1 and 2 of 3	**Description:** **The EHR vendor loads Rotavirus immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted**

	electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.
Enter Influenza History Doses	**Description:** **The EHR vendor loads Influenza immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter HepA Dose1 and 2 of 2	**Description:** **The EHR vendor loads HepA immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Enter MMRV Dose1 and 2 of 3	**Description:** The EHR vendor loads MMRV immunization history data for Juana Mariana Gonzales. **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Test Case	**Juan Marcel Gonzales Initial Data Load**
Description: The practice site for the scenario is Shoreline Pediatrics. The EHR vendor loads demographic data and clinical history for Juan Marcel Gonzales. The data includes a clinical history of Asthma.	
Test Steps	
Enter Initial Demographic Data for New Patient Juan Marcel Gonzales	**Description:** **The EHR vendor loads demographic data for Juan Marcel Gonzales.** **Test Objectives:** ***Register New Patients:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
	Description: **The clinical history of Moderate Persistent Asthma is documented in the record created for Juan Marcel Gonzales.**

Enter Clinical History for Juan Marcel Gonzales	**Test Objectives:** **Supporting data for:** ***Modify Antigen Recommendations Based on Active Diagnoses:*** **The system notifies the provider of any conflicts between recommended vaccines in the updated forecast and the patient's current or historical diagnoses.**
Enter HepB Dose1 and 2 of 3	**Description:** **The EHR vendor loads HepB immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter DTaP Doses 1-4 of 5 Juan Marcel	**Description:** **The EHR vendor loads DTaP immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Enter Hib Doses 1-4 of 4 Juan Marcel	**Description:** **The EHR vendor loads Hib immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Polio Dose1-3 of 4 Juan Marcel	**Description:** **The EHR vendor loads Polio immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter	**Description:** **The EHR vendor loads Pneumococcal immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another**

Pneumococcal,Doses 1-4 of 4 Juan Marcel	**doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Rotavirus Dose1 and 2 of 3 Juan Marcel	**Description:** **The EHR vendor loads Rotavirus immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter Influenza History Doses Juan Marcel	**Description:** **The EHR vendor loads Influenza immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were**

	accepted electronically from the public health registry.
Enter HepA Dose1 and 2 of 2 Juan Marcel	**Description:** **The EHR vendor loads HepA immunization history data for Juana Mariana Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
Enter MMRV Dose1 of 3 Juan Marcel	**Description:** **The EHR vendor loads MMRV immunization history data for Juan Marcel Gonzales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Test Case	**Mariela Gonzales Morales Initial Data Load**
Description: The practice site for the scenario is Shoreline Pediatrics. The EHR vendor loads demographic data and clinical history for twin Mariela Gonzales Morales.	
Test Steps	

Enter Initial Demographic Data for Mariela Gonzales Morales	**Description:** **The EHR vendor loads demographic data for Mariela Gonzales Morales.** **Test Objectives:** ***Register New Patients:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Enter HepB Dose1 of 3 Mariella	**Description:** **The EHR vendor loads HepB immunization history data for Mariela Gonzales Morales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Test Case	**Juana Maria Gonzales Morales Initial Data Load**
Description: The practice site for the scenario is Shoreline Pediatrics. The EHR vendor loads demographic data and clinical history for twin Juana Maria Gonzales Morales	
Test Steps	
	Description: **The EHR vendor loads demographic data for Juana Maria Gonzales Morales.**

Enter Initial Demographic Data for Juana Maria Gonzales Morales	**Test Objectives:** ***Register New Patients:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Enter HepB Dose1 of 3 Juana Maria	**Description:** **The EHR vendor loads HepB immunization history data for Juana Maria Gonzales Morales.** **Test Objectives:** ***Record Past Immunizations:*** **The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

Test Case Group: Juana Mariana Gonzales Visit

Juana Marian Gonzales visits the provider where her immunization history is retrieved from the registry and reconciled with the local information in the medical record to determine vaccines that are due. Vaccinations are ordered and administered. The parents refuse the Polio vaccine due to prior issues. The vaccines are reported to the immunization registry and a vaccine summary is available for the patient.

Test Case	Query the Registry for Juana Mariana Gonzales

Description:

The EMR Generates a Z44 query to the Immunization Registry to retrieve the Evaluated History and Forecast for Juana Mariana Gonzales.
Querying the registry will consist of the vendor creating Z44 messages for Juana Mariana Gonzales to be sent to the registry.

Using the Z42 Response to Immunization Registry Query, the EMR displays the Evaluated History and Forecast to the user for reconciliation and update. The vendor will receive information back from the registry and show the ability to view and reconcile, and import the information returned by the registry (NOTE: the

Z42 message will be provided either manually, or as part of the tool). This test will also look at the system's ability to view the forecast returned by the registry, and create a new forecast after reconciling the information.

Note: This Test Case includes the query response functionality. While the system under test will not be able to perform the query/response functions, the rationale will be documented in the tool.This Test Case includes additional functionality for reconciling the history and providing vaccine forecast information based upon the data that was manually entered during the Initial Data Load.

Test Steps	
Select Patient Juana Mariana Gonzales	**Description:** **Juana Mariana Gonzales is selected as the patient and her record is opened in the EMR.** **Test Objectives:** ***Select New Patient:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Query Registry for vaccination history and forecast for Juana Mariana Gonzales	**Description:** **The provider uses the EMR to query the Immunization Registry for an Evaluated History and Forecast based on information known to the Immunization Registry.** **Test Objectives:** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
	Description: **The Immunization Registry returns an Evaluated History and Forecast (Z42) to the EMR in response to the query for patient (Juana Mariana Gonzales). The provider reviews the immunization history from the registry and compares to the immunization history in the EMR. The provider reconciles the information from**

View and Compare response to request for vaccination history for Juana Mariana Gonzales	**these sources, importing information known only to the registry, retaining information that is more accurately reflected in the local EMR:** The physician accesses the record for Juana Mariana Gonzales and: - Reconciles the EHR vaccine history with the history retrieved from the registry: - Accepts new vaccines from the registry data - If the EHR does not already flag the first MMRV as invalid, the provider updates the first MMRV to indicate it is "invalid" as it was given too early (as notified by the registry) - Retains the local history for influenza and polio vaccines that are not included in the registry report. **Test Objectives:** ***Real Time Request/Receive Patient Immunization History: The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).*** ***Compare Public Health Immunization Registry (IIS) Immunization History to EHR Immunization History:*** **The public health immunization registry has returned the requested immunization history for a patient. The EHR is able to display the immunization history received from the registry as well as the immunization history already present in the EHR so that a user can compare them. The EHR provides a way for the provider to view both histories, determine what is different (if anything), and update the existing EHR immunization history with new information from the public health registry if he or she chooses to do so. The system must store the new information as structured data as part of the patient's local immunization history and include the time of the update and the source of the new information.** ***Review Patient Immunization History:*** To assist with the ordering process, the EHR or other clinical software system allows a user to specify standard views of patient immunization information for each vaccine dose administration, including patient-specific data (e.g., age on dates of administration, etc.).
Mark first MMR Dose as Invalid	**Description:** **If the EHR does not already flag the first MMR as invalid, the provider updates the first MMR to indicate it is "invalid" as it was given too early (as notified by the registry). The next MMR is entered as given 14 days prior to the test date.** **Test Objectives:** **Dose validity is an important aspect of:** ***Record Past Immunizations:*** The EHR or other clinical software system allows providers to enter information about immunizations given elsewhere (e.g., by another doctor, at a public health clinic, pharmacy, etc.) with incomplete details.
	Description: **The physician accesses the record for Juana Mariana Gonzales and:**

View the vaccination forecast for Juana Mariana Gonzales	**? Displays the registry forecast which includes the need for a second, valid MMRV vaccine and also the need for influenza and polio vaccines (since the registry has no information about them)** **Test Objectives:** ***View Immunization Forecast:*** **The system provides a view of the immunization forecast provided by the public health immunization registry (IIS). The display includes the forecast from the registry and includes recommended vaccination dates, minimum (earliest) date, ideal date, and maximum (latest) date for each vaccine included in the forecast.**
Reconcile and import vaccinations from Evaluated History and Forecast for Juana Mariana Gonzales	**Description:** **Juana Maria Gonzales Morales immunization registry provided Evaluated History and Forecast is reconciled with the Immunization history information in the EMR.** **Test Objectives:** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
View the updated vaccination forecast for Juana Mariana Gonzales	**Description:** **Once the vaccine history is reconciled in the EMR, the vaccine forecast is updated.** **Test Objectives:** ***View Reconciled Immunization Forecast:*** **The EHR or other clinical software system has the ability to re-evaluate and update the immunization forecast using a patient's newly updated immunization history, where the updated forecast results from the reconciliation of immunization data contained in the public health immunization registry with immunization data contained in the EHR. Processing the new forecast can be internal to the EHR or it can use an external forecasting service.**

Test Case	**Juana Mariana Gonzales, Enter Orders and Immunizations**

Description:

This test will consist of ordering vaccines for the test patients, reviewing any alerts caused by specific scenarios, and documenting vaccinations administered to the patients.

Test Steps	
Order IPV and view prior reaction	**Description:** **The physician accesses the record for Juana Mariana Gonzales and:** **• Selects order for IPV and views information about the prior febrile seizure post-IPV vaccine** **Test Objectives:** ***Notify of Previous Adverse Event:*** **EHRs and other clinical software systems alert providers to previous adverse events for a specific patient, in order to inform clinical decision-making when providers view an existing immunization record.**
IPV Parental Refusal	**Description:** **The mother is concerned about administering the IPV due to the prior adverse reaction, and refuses to have the child immunized for IPV. The provider documents mother's refusal for IPV vaccine indicating the parent decision, the reason and makes it permanent.** **Test Objectives:** ***Record Vaccine Administration Deferral:*** **The EHR or other clinical software system allows a user to enter a reason or reasons why a specific immunization was not given to a patient (e.g., due to contraindication, refusal, etc.). The system also stores that information in a structured way so it can be reported and analyzed as needed.**
Order Influenza vaccine and view allergy alert	**Description:** **The provider orders inactivated influenza vaccine and is notified that the patient as allergy to egg albumin** **Test Objectives:** ***Modify Antigen Recommendations Based on Allergy History:*** **The system notifies the provider of any conflicts between recommended vaccines in the updated forecast and the patient's active allergies.**
Attempt to order Varicella Dose	**Description:** The provider attempts to give a Varicella dose, and is warned that it is too soon to give a live vaccine dose. **Test Objectives:** ***Receive Dose Not Indicated Alert for Single Vaccine Order:*** The EHR or other clinical

	software system notifies the provider in instances when there are single or combination vaccine orders that are inconsistent with the expected timing intervals included in the vaccine forecast. Inconsistencies include suggestion of different date(s) for ordering the vaccine(s) or indication the vaccine(s) is/are no longer required.
Records Influenza Vaccine administration route with data validation checking	**Description:** **The nurse documents administration route for the nasal live, attenuated influenza vaccine** **• Is prevented from documenting "IM" for live, attenuated influenza vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.** **Sample of data quality checking for vaccine route.**
Record Influenza Vaccine administration	**Description:** **The nurse administers the the nasal live, attenuated influenza vaccine** **• Documents all required information for each vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.**
Records MMRV Vaccine administration route with data validation checking	**Description:** **The nurse documents administration route for the MMRV vaccine** **? Is prevented from documenting "oral" for MMRV vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.**

	Sample of data quality checking for vaccine route.
Record MMRV Vaccine administration	**Description:** **The nurse administers the MMRV vaccine** **? Documents all required information for each vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.**

Test Case	**Juana Mariana Gonzales Transmit Immunization Report**
Description: Following the vaccinations given during the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes all newly administered vaccines. The report should include vaccines incorrectly recorded in the IIS. The report MAY send the immunizations that the EMR imported from the IIS.	
Test Steps	
Transmit the immunization report for Juana Mariana Gonzales	**Description:** **Following the vaccinations given during the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes all newly administered vaccines. The report should include vaccines incorrectly recorded in the IIS. The report MAY send the immunizations that the EMR imported from the IIS.** **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** **The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.**
Receive ACK Z23 from Immunization	**Description:** The Immunization Registry returns a positive acknowledgement message indicating that no errors were found during the course of filing the message.

Registry	**Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.
Record an adverse reaction	**Description:** **Following the vaccine administration, the patient's mother reports that the patient that evening had persistent, inconsolable crying lasting > 3 hours.** **Test Objectives:** ***Identify Adverse Event:*** **The EHR or other clinical software system enables capture of structured data regarding adverse events.**
Transmit the updated vaccination report with adverse reaction to the registry	**Description:** **The adverse reaction to the MMRV of persistent, inconsolable crying lasting > 3 hours within 48 hours of dose is reported to the Immunization Registry using a Z22/VXU message.** **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** **The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.**
Receive ACK Z23 from Immunization Registry for Updated Transmission	**Description:** The Immunization Registry returns a positive acknowledgement message indicating that no errors were found during the course of filing the message. **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries

Test Case	**Juana Mariana Gonzales Display Immunization Report**
Description: Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient portal, etc.)	
Test Steps	
	Description:

Produce an immunization report for Juana Mariana Gonzales including all history	**Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient portal, etc.)** **Test Objectives:** ***Produce Standard Patient Immunization History Report:*** **The EHR or other clinical software system produces a report of a patient's immunization history that is appropriate for various entities, such as schools and day-care centers.** ***Produce Immunization Forecast Report:*** **The EHR or other clinical software system creates a list of immunizations to be administered within a specified time frame.**

Test Case Group: Juan Marcel Gonzales Visit

Juan Marcel Gonzales visits the provider where his immunization history is retrieved from the registry and reconciled with the local information in the medical record to determine vaccines that are due. Vaccinations are ordered and administered. The vaccines are reported to the immunization registry and a vaccine summary is available for the patient.

Test Case	Query the Registry for Juan Marcel Gonzales
Description: The EMR Generates a Z44 query to the Immunization Registry to retrieve the Evaluated History and Forecast for Juan Marcel Gonzales. Querying the registry will consist of the vendor creating Z44 messages for Juana Marcel Gonzales to be sent to the registry. **Using the Z42 Response to Immunization Registry Query, the EMR displays the Evaluated History and Forecast to the user for reconciliation and update. The vendor will receive information back from the registry and show the ability to view and reconcile, and import the information returned by the registry (NOTE: the Z42 message will be provided either manually, or as part of the tool). This test will also look at the system's ability to view the forecast returned by the registry, and create a new forecast after reconciling the information.** **Note: This Test Case includes the query response functionality. While the system under test will not be able to perform the query/response functions, the rationale will be documented in the tool.This Test Case includes additional functionality for reconciling the history and providing vaccine forecast information based upon the data that was manually entered during the Initial Data Load.**	
Test Steps	
	Description: **Juan Marcel Gonzales is selected as the patient and his record is opened in the EMR.**

Select Patient Juan Marcel Gonzales	**Test Objectives:** ***Select New Patient:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Query Registry for vaccination history and forecast for Juan Marcel Gonzales	**Description:** **The provider uses the EMR to query the Immunization Registry for an Evaluated History and Forecast based on information known to the Immunization Registry.** **Test Objectives:** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) – HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
View and import response to request for vaccination history for Juan Marcel Gonzales	**Description:** **The physician accesses the record for Juan Marcel Gonzales and:** **? Accepts the vaccines provided by the registry as this is a new patient and there are no prior vaccines recorded** **? Views the registry history including the second dose of Hepatitis B vaccine given late (at 2 years of age) and no history of a third dose; influenza vaccine was also not given since 2013** **Test Objectives:** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can**

	read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5). ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**
View the vaccination forecast for Juan Marcel Gonzales returned by the Immunization Registry	**Description:** **The physician accesses the record for Juan Marcel Gonzales and:** **? Views the vaccine forecast provided by the Immunization Registry** **Test Objectives:** ***View Immunization Forecast:*** **The system provides a view of the immunization forecast provided by the public health immunization registry (IIS). The display includes the forecast from the registry and includes recommended vaccination dates, minimum (earliest) date, ideal date, and maximum (latest) date for each vaccine included in the forecast.**
View the vaccination forecast for Juan Marcel Gonzales	**Description:** **The physician accesses the record for Juan Marcel Gonzales and, once the vaccine history is reconciled in the EMR, the vaccine forecast is updated :** **• The provider views the updated vaccine forecast (either as provided by the Immunization Registry or as determined through EMR defined methods)** **Test Objectives:** ***View Reconciled Immunization Forecast:*** **The EHR or other clinical software system has the ability to re-evaluate and update the immunization forecast using a patient's newly updated immunization history, where the updated forecast results from the reconciliation of immunization data contained in the public health immunization registry with immunization data contained in the EHR. Processing the new forecast can be internal to the EHR or it can use an external forecasting service.**

Test Case	**Juan Marcel Gonzales, Enter Orders and Immunizations**
Description: This test will consist of ordering vaccines for the test patients, reviewing any alerts caused by specific scenarios, and documenting vaccinations administered to the patients.	

Test Steps	
Order intranasal, live virus influenza vaccine and view asthma contraindication	**Description:** **The physician accesses the record for Juan Marcel Gonzales and:** **• Orders administration of Influenza vaccine (intranasal, live virus vaccine)** **• Receives notification the patient has asthma, a relative contraindication for intranasal influenza vaccine** **Test Objectives:** ***Modify Antigen Recommendations Based on Active Diagnoses:* The system notifies the provider of any conflicts between recommended vaccines in the updated forecast and the patient's current or historical diagnoses.** ***Enter Vaccination Order:* The EHR or other clinical software system allows providers to order immunizations for a patient using filters for type of vaccine, including combination vaccines.**
Orders administration of Hepatitis B vaccine	**Description:** **As indicated by the vaccine forecast, the third Hepatitis B is overdue, and is ordered.** **Test Objectives:** ***Enter Vaccination Order:* The EHR or other clinical software system allows providers to order immunizations for a patient using filters for type of vaccine, including combination vaccines.**
Orders administration of DTaP vaccine and alerted that the dose is too early	**Description:** **The fifth DTaP is ordered, and the provider is notified that the dose is too early.** **Test Objectives:** ***Receive Dose Not Indicated Alert for Single Vaccine Order:* The EHR or other clinical software system notifies the provider in instances when there are single or combination vaccine orders that are inconsistent with the expected timing intervals included in the vaccine forecast. Inconsistencies include suggestion of different date(s) for ordering the vaccine(s) or indication the vaccine(s) is/are no longer required.** ***Enter Vaccination Order:* The EHR or other clinical software system allows providers to order immunizations for a patient using filters for type of vaccine, including combination vaccines.**

Records Hepatitis B Vaccine lot number with expired lot alert	**Description:** **The nurse documents administration lot number for the Hepatitis B vaccine** **? Is prevented from ordering the Hepatitis B lot as it has expired** **? Documents administration from a different lot that is not expired** **Test Objectives:** ***Notify of Vaccine Dose Expiration:*** **The EHR or other clinical software system notifies the provider administering a vaccine if the dose chosen for administration is expired.**
Record Hepatitis B Vaccine administration	**Description:** **The nurse administers the the Hepatitis B vaccine** **• Documents all required information for the vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.**
Records Influenza Vaccine administration with VFC eligibility checking	**Description:** **The nurse documents administration for the inactivated influenza vaccine from a VFC source** **• Is alerted that the patient is not eligible for VFC** **• Orders a different non-VFC lot of inactivated influenza vaccine** **Test Objectives:** ***Notify of Vaccine Dose Ineligibility:*** **The EHR or other clinical software system provides a method for alerting a provider if a vaccine is selected for a patient who is not eligible for the inventory item selected.**
Record Influenza Vaccine administration for Juan Marcel	**Description:** **The nurse administers the inactivated influenza vaccine** **? Documents all required information for each vaccine** **Test Objectives:** ***Record Vaccine Administration:*** **The EHR or other clinical software system**

Gonzales	**records information about each vaccine administered. The EHR records this information as structured data elements, including, at a minimum: date administered, administering clinician, site of administration (e.g., left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.**

Test Case	**Juan Marcel Gonzales Transmit Immunization Report**
Description: Following the vaccinations given during the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes all newly administered vaccines. The report should include vaccines incorrectly recorded in the IIS. The report MAY send the immunizations that the EMR imported from the IIS.	
Test Steps	
Transmit the Immunization Report for Juan Marcel Gonzales	**Description:** **Following the vaccinations given during the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes all newly administered vaccines. The report MAY send the immunizations that the EMR imported from the IIS.** **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** **The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.** **The VXU/Z22 message passes validation using the NIST Immunization VXU Validation Tool (Z22) (context-free). The content of the message correctly reflects the test data (context-based) in accordance with the Test Data Specification and the Message Content.**
Receive ACK Z23 from Immunization Registry	**Description:** The Immunization Registry returns a positive acknowledgement message indicating that no errors were found during the course of filing the message. **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.

Test Case	**Juan Marcel Gonzales Display Immunization Report**
Description: Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient	

portal, etc.)

Test Steps	
Produce an immunization report for Juan Marcel Gonzales including all history	**Description:** **Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient portal, etc.)** **Test Objectives:** ***Produce Standard Patient Immunization History Report:*** **The EHR or other clinical software system produces a report of a patient's immunization history that is appropriate for various entities, such as schools and day-care centers.** ***Produce Immunization Forecast Report:*** **The EHR or other clinical software system creates a list of immunizations to be administered within a specified time frame.**

Test Case Group: Mariela Gonzales Morales Visit

Infant twin, Mariela Gonzales Morales visits the provider where her immunization history is retrieved from the registry and reconciled with the local information in the medical record to determine vaccines that are due. Vaccinations are ordered and administered. The vaccines are reported to the immunization registry and a vaccine summary is available for the patient.

Test Case	Query the Registry for Mariela Gonzales Morales

Description:

The EMR Generates a Z44 query to the Immunization Registry to retrieve the Evaluated History and Forecast for Mariela Gonzales Morales.
Querying the registry will consist of the vendor creating Z44 messages for Mariela Gonzales Morales to be sent to the registry.

Using the Z42 Response to Immunization Registry Query, the EMR displays the Evaluated History and Forecast to the user for reconciliation and update. The vendor will receive information back from the registry and show the ability to view and reconcile, and import the information returned by the registry (NOTE: the Z42 message will be provided either manually, or as part of the tool). This test will also look at the system's ability to view the forecast returned by the registry, and create a new forecast after reconciling the information.

Note: This Test Case includes the query response functionality. While the system under test will not be able to perform the query/response functions, the rationale will be documented in the tool.This Test Case includes additional functionality for reconciling the history and providing vaccine forecast information based upon the data that was manually entered during the Initial Data Load.

Test Steps	
	Description:

Select Patient Mariela Gonzales Morales	**Mariela Gonzales Morales is selected as the patient and her record is opened in the EMR.** **Test Objectives:** ***Select New Patient:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Query Registry for vaccination history and forecast for Mariela Gonzales Morales	**Description:** **The provider uses the EMR to query the Immunization Registry for an Evaluated History and Forecast based on information known to the Immunization Registry.** **Test Objectives:** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
View and import response to request for vaccination history for Mariela Gonzales Morales	**Description:** **The physician accesses the record for Mariela Gonzales Morales and:** **• Accepts the single vaccine in the registry record into the EHR history** **Test Objectives:** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.**

	Real Time Request/Receive Patient Immunization History: **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
View the vaccination forecast for Mariela Gonzales Morales returned by the Immunization Registry	**Description:** **The physician accesses the record for Mariela Gonzales Morales and:** **• Views the vaccine forecast provided by the Immunization Registry** **Test Objectives:** ***View Immunization Forecast:*** **The system provides a view of the immunization forecast provided by the public health immunization registry (IIS). The display includes the forecast from the registry and includes recommended vaccination dates, minimum (earliest) date, ideal date, and maximum (latest) date for each vaccine included in the forecast.**
View the vaccination forecast for Mariela Gonzales Morales	**Description:** **The physician accesses the record for Mariela Gonzales Morales and:** **• Views the vaccine forecast (either as provided by the Immunization Registry or as determined through EMR defined methods)** **Test Objectives:** ***View Reconciled Immunization Forecast:*** **The EHR or other clinical software system has the ability to re-evaluate and update the immunization forecast using a patient's newly updated immunization history, where the updated forecast results from the reconciliation of immunization data contained in the public health immunization registry with immunization data contained in the EHR. Processing the new forecast can be internal to the EHR or it can use an external forecasting service.**

Test Case	**Mariela Gonzales Morales, Enter Orders and Immunizations**
Description: This test will consist of ordering vaccines for the test patients, reviewing any alerts caused by specific scenarios, and documenting vaccinations administered to the patients.	
Test Steps	

Enter Initial Clinical Information for Mariela	**Description:** **The triage nurse enters basic information on Mariela Gonzales Morales – she has a fever (Temperature of 100.8o F).** **Test Objectives:** **Supporting data for documenting contraindications (it could also trigger an alert as a locally configured alert rule): *Modify Antigen Recommendations Based on Active Diagnoses:* The system notifies the provider of any conflicts between recommended vaccines in the updated forecast and the patient's current or historical diagnoses.**
Enters a deferral for the vaccines due	**Description:** **The physician accesses the record for Mariela Gonzales Morales and:** **• Enters a deferral for the vaccines due (Hepatitis B, DTaP, Hib, Pneumococcal conjugate (PCV13) and Rotavirus) due to medical reason, indicating low grade fever, and defers for 1 month** **Test Objectives:** ***Record Vaccine Administration Deferral:* The EHR or other clinical software system allows a user to enter a reason or reasons why a specific immunization was not given to a patient (e.g., due to contraindication, refusal, etc.). The system also stores that information in a structured way so it can be reported and analyzed as needed.**

Test Case	**Mariela Gonzales Morales Transmit Immunization Report**
Description: Following the vaccinations given during the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes all newly administered vaccines. The report should include vaccines incorrectly recorded in the IIS. The report MAY send the immunizations that the EMR imported from the IIS.	
Test Steps	
Transmit the Immunization Report for Mariela Gonzales Morales	**Description:** **Following the visit, the EMR transmits an Immunization report to the Immunization Registry using the VXU/Z22. The Vaccination report includes the vaccine deferrals. The report MAY send the immunizations that the EMR imported from the IIS.** **Test Objectives:** ***Transmit Standard Patient Immunization History Report:* The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.**

Receive ACK Z23 from Immunization Registry	**Description:** The Immunization Registry returns a positive acknowledgement message indicating that no errors were found during the course of filing the message. **Test Objectives:** ***Transmit Standard Patient Immunization History Report:*** The EHR or other clinical software system directly or indirectly through an intermediary creates and transmits a report of a patient's immunization history to public health immunization registries.

Test Case	**Mariana Gonzales Morales Display Immunization Report**
Description: Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient portal, etc.)	
Test Steps	
Produce an immunization report for Juan Marcel Gonzales including all history	**Description:** **Following the vaccination visit, the provider uses the EMR to produce an immunization report for the patient including all history (the report can be provided in various formats - e.g., print, send to patient portal, etc.)** **Test Objectives:** ***Produce Standard Patient Immunization History Report:*** **The EHR or other clinical software system produces a report of a patient's immunization history that is appropriate for various entities, such as schools and day-care centers.** ***Produce Immunization Forecast Report:*** **The EHR or other clinical software system creates a list of immunizations to be administered within a specified time frame.**

Test Case Group: Juana Maria Gonzales Morales Visit

No Description

Test Case	**Query the Registry for Juana Maria Gonzales Morales.**
Description: The EMR Generates a Z44 query to the Immunization Registry to retrieve the Evaluated History and Forecast for Juana Maria Gonzales Morales. Querying the registry will consist of the vendor creating Z44 messages for Juana Maria Gonzales Morales to be sent to the registry.	

Using the Z42 Response to Immunization Registry Query, the EMR displays the Evaluated History and Forecast to the user for reconciliation and update. The vendor will receive information back from the registry and show the ability to view and reconcile, and import the information returned by the registry (NOTE: the Z42 message will be provided either manually, or as part of the tool). This test will also look at the system's ability to view the forecast returned by the registry, and create a new forecast after reconciling the information.

Note: This Test Case includes the query response functionality. While the system under test will not be able to perform the query/response functions, the rationale will be documented in the tool.This Test Case includes additional functionality for reconciling the history and providing vaccine forecast information based upon the data that was manually entered during the Initial Data Load.

Test Steps	
Select Patient Juana Maria Gonzales Morales	**Description:** **Juana Maria Gonzales Morales is selected as the patient and her record is opened in the EMR.** **Test Objectives:** ***Select New Patient:*** **The system must allow a user to enter distinguishing information about patients so that providers can uniquely identify patients who have similar sounding names or other similar identifying information. For example, twins living in the same household will have similar dates of birth, addresses, and may have similar names. EHRs or other clinical software must be able to store information to successfully match with patients in immunization registries, if the information is available. The information includes the mother's maiden name, whether the patient was part of a multiple birth, and the order of the multiple birth. This information allows the provider to correctly identify the patient and also helps assure a match when the EHR send the patient's information to external systems such as an immunization registry.**
Query Registry for vaccination history and forecast for Juana Maria Gonzales Morales	**Description:** **The provider uses the EMR to query the Immunization Registry for an Evaluated History and Forecast based on information known to the Immunization Registry.** **Test Objectives:** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
	Description: **The physician accesses the record for Juana Maria Gonzales Morales and:**

View and import response to request for vaccination history for Juana Maria Gonzales Morales	**• Accepts the single vaccine in the registry record into the EHR history** **Test Objectives:** ***Request/Receive Patient Immunization Data and Identify Source:*** **The EHR or other clinical software is able to store immunization history accepted electronically from other sources (such as a public health immunization registry consistent with HL7 version 2.5.1, Implementation Guide for Immunization Messaging Release 1.5) or communicated by the patient and manually entered by the clinician. When viewing such information, the provider can determine which immunizations were administered by the practice, which were entered manually as patient-reported, and which were accepted electronically from the public health registry.** ***Real Time Request/Receive Patient Immunization History:*** **The system sends a request to the public health immunization registry "on demand" (e.g., those without scheduled appointments). The request includes the identifying information the immunization registry needs to match each patient with those in the registry including, if present, the mother's maiden name, a multiple birth indicator, and the birth order. The request also is sent in a pre-determined format the registry can read and interpret (Query Response Grammar (RSP) - HL7 version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5).**
View the vaccination forecast for Juana Maria Gonzales Morales returned by the Immunization Registry	**Description:** **The physician accesses the record for Juana Maria Gonzales Morales and:** **• Views the vaccine forecast provided by the Immunization Registry** **Test Objectives:** ***View Immunization Forecast:*** **The system provides a view of the immunization forecast provided by the public health immunization registry (IIS). The display includes the forecast from the registry and includes recommended vaccination dates, minimum (earliest) date, ideal date, and maximum (latest) date for each vaccine included in the forecast.**
View the vaccination forecast for Juana Maria Gonzales Morales	**Description:** **The physician accesses the record for Juana Maria Gonzales Morales and:** **• Views the vaccine forecast (either as provided by the Immunization Registry or as determined through EMR defined methods)** **Test Objectives:** ***View Reconciled Immunization Forecast:*** **The EHR or other clinical software system has the ability to re-evaluate and update the immunization forecast using a patient's newly updated immunization history, where the updated forecast results from the reconciliation of immunization data contained in the public health**

	immunization registry with immunization data contained in the EHR. Processing the new forecast can be internal to the EHR or it can use an external forecasting service.

Test Case Group: Cohort Report

This test will consist of generating a cohort report to list all patients who are overdue for immunizations showing all overdue immunizations with the associated due/overdue dates.

Test Case	Overdue Immunizations
Description: **The provider periodically uses the EMR to identify the cohort of patients that are overdue for immunizations along with their contact information in order to send reminder notifications to the patients/parents.**	
Test Steps	
Produce Overdue Immunizations Cohort Report	**Description:** The provider periodically uses the EMR to identify the cohort of patients that are overdue for immunizations along with their contact information in order to send reminder notifications to the patients/parents. **Test Objectives:** ***Produce Population-Level Report:*** **The EHR or other clinical system generates aggregate, population-level reports based on known patient immunization data.**