HL7 QBP Guide

Version history

Version	Date	Notes
1.0	4/21/2023	
1.1		

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CIR QBP Live Demo testing

Introduction

Query testing ensures the ability to query the CIR and receive expected responses in return. Query for patients previously submitted in VXU messages and new patients on your own to explore querying capabilities.

A live demo is requested, and we ask the organization to query several CIR test patients to understand CIR responses (exact match, not found/no match, and too many matches). If you have questions about querying with the CIR, reach out to the CIR interop team at cir_interop@health.nyc.gov.

In this document you will find the CIR query demo test patients required for the demo and the query scenarios that will be covered. Various appendices are also included as a resource for the EHR/Health IT system that provides information such as list of local NYC codes that should be mapped.

CIR Interoperability Resources

CIR Implementation Guide 2.5.1 Reference Link:	https://www1.nyc.gov/assets/doh/downloads/pdf/cir/hl7-web-service-integration-guide251.pdf
CIR Immunization Program Website	https://www1.nyc.gov/site/doh/providers/reporting-and-services/citywide-immunization-registry-cir.page
CIR Onboarding Summary Guide	https://www1.nyc.gov/assets/doh/downloads/pdf/cir/cir-hl7-onboarding-interface-summary-cirhubfaccode.pdf
Health Plan Checklist	https://www1.nyc.gov/assets/doh/downloads/pdf/cir/hl7-bulk-imm-records-onboarding-checklist

CIR Interop QBP Demo Test Patients

The following test patients are intended for use during the CIR bidirectional interface demonstration. Build these test patients in your system with the demographic information below. CIR patient ID is not required. Do not query for the test patients if your system cannot remove the data import at the time of the demo. The first table below describes the expectation for each test scenario. The second table provides the demographic information for each test patient.

#	Preparing the EHR for the DEMO	Notes
1	Build **Darateen Test** for Scenario #1 New Test Patient Single Match, Scenario #2 Invalid Historical Doses, Scenario #3 Immunization Forecast, and Scenario #4 Immunization Recommendations **Darateen Test should have NO IMMUNIZATIONS documented in the EHR prior to the demo**	End user should see vaccine history, immunization forecast and recommendations, and a message about invalid vaccine shot.
2	Build **Bartkid Test** for Scenario #5 Existing Patient Single Match. **Build Bartkid Test should have the following immunizations documented in the EHR but not reported to the CIR: 1 Hep B documented on 11/17/2011 and MMR documented on 12/02/2012.**	End user should see vaccine history, immunization recommendations, and a message about invalid vaccine shot.
3	Build **BabyHuey Test** for Scenario #6: Single Match with Non-fatal Errors **BabyHuey Test should have the exact address listed to populate non-fatal error if possible.**	End user should see vaccine history, immunization recommendations, and a message about invalid vaccine shot
4	Build **Too Many Test** for Scenario #7: Too Many Patient Matches Found	End user should see a message like "No exact match found"
5	Use a test patient of your own that does not exist in the CIR for Scenario #8: No Patient Found	End user should see a message like "No exact match found"

First Name	Last Name	DOB	Gender	Middle Name	Maiden Name	House No	Street Address	Cell Phone	Multiple Birth Flag
DARATEEN	TEST	9/3/2002	Female	TWELVEYRTOEIGHTEEN	MORGENTEST	18	TEENAGER PLACE Hogwarts NY, 11101	999^5551313	N
BARTKID	TEST	11/17/2011	Male	SIXYRTOELEVENYR	SIMPSONTEST	11	11TH ROAD Brooklyn NY, 11215	315^4444444	N
BABYHUEY	TEST	1/7/2018	Male	TWOSIXMTHS	HUEYMOTHER	1	FIRST STREET APARTMENT WITH REALLY LONG ADDRESS FOR ERROR, APARTMENTNUMBER New York NY, 10111	555^5555514	N
Too Many	TEST	1/1/2020	Female			18	WAVERLY PLACE LIC NY, 11101		
Facility/Hospital Street Name	EHR Name	EHR Vendor create DOB	EHR Vendor Gender						

CIR Query Demo Testing Scenarios

For a hospital/facility looking to query only or looking to establish a bidirectional connection, the hospital/facility/EHR vendor should agree to provide a live demonstration querying the CIR test patients. Below are the eight scenarios the CIR interoperability analysts will review. If your EHR vendor is not able to provide a live demo, we ask to provide screenshots or to answer the questions from the eight scenarios and email these to the CIR interoperability analyst you are working with and/or to cir_interop@health.nyc.gov.

Before the QBP call, ensure you have access to clinical provider's **LIVE** interface.

1. New Patient Scenario for Single Match Found			
The EHR should demonstrate the ability to query a new test patient with no immunizations documented within the EHR for that patient.			
Demonstrate with test patient Darateen Test, there should be no immunizations documented within the EHR			**Provide your answer below**
1.1. Demonstrate how query is triggered within the EHR (Automatic vs Manual)			
Question 1.	How are queries in the EHR Triggered?	Automatic: A query is triggered on the backend by an end user's workflow event	Yes/No
		Manual: A query is triggered by the end user clicking a button for the query	Yes/No
1.2. Displaying **Darateen Test**'s historical immunization record returned by the CIR in the EHR			
1.3. Show where and how the patient's immunization history is displayed in the EHR for Darateen Test			
Question 2.	Can the entire CIR immunization history be added to the EHR record by selecting all?		Yes/No
Question 3.	Can the end user add one Vaccine Group at a time? For example, all the Hep B dose can be added with 1 click		Yes/No
Question 4.	Can each individual Vaccine be added 1 at a time?		Yes/No
Any additional notes on how the CIR Immunization History is added to the EHR Patient record:			

2. Single Match Found with Invalid Historical Doses		
The EHR should demonstrate the ability to query a patient with invalid historical doses and display the historical immunizations that were evaluated by the CIR as invalid based on the patient's age and immunization history.		
Please Note: An Invalid Dose is a historical immunization event that was evaluated by the CIR to have a dose validity of invalid based on the patient's age and immunization history. Invalid doses should not be counted towards the patient's immunization schedule. For Invalid Dose LOINC CODES and reasons reference tab RSP OBX LOINC CODES and Invalid Dose Codes.		
Demonstrate with test patient Darateen Test		**Provide your answer below**
4.1. Query **Darateen Test**		
4.2. Demonstrate how the immunization history returned from the CIR shows in the EHR		
Question 1.	Are the invalid doses being displayed in the immunization history returned from the CIR or from internal evaluation?	Yes/No
Question 2.	Are the invalid doses flag or dose validity showing as No or Not Valid?	Yes/No
Question 3.	Are the invalid doses reasons showing?	Yes/No
Any additional notes on how the EHR displays invalid doses?		

3. Single Match Found with Immunization Forecasting		
The EHR should demonstrate the ability to query a patient with immunization forecasting.		
Demonstrate with test patient Darateen Test, there should be no immunizations documented within the EHR.		**Provide your answer below**
5.1. Display forecasting for next doses with **Darateen Test**		
Question 1.	Does the EHR use the CIR's immunization forecasting?	Yes/No
Question 2.	Can the EHR use an internal module to display immunization forecasting for next doses?	Yes/No
Question 3.	Does the EHR display immunization forecasting for next doses that are overdue as DUE NOW or a date in the past?	Yes/No
Any additional notes on how the EHR displays immunization forecasting?		

4. Single Match Found with Immunization Recommendations		
The EHR should demonstrate the ability to query a patient with immunization forecasting.		
Demonstrate with test patient Darateen Test, there should be no immunizations documented within the EHR.		**Provide your answer below**
6.1. Display immunization recommendations with Darateen Test		
Question 1.	Does the EHR display the CIR recommendations?	Yes/No
Question 2.	Can the EHR use an internal module to display recommendations?	Yes/No
Any additional notes on how the CIR Immunization Recommendations are added to the EHR Patient record:		

5. Existing Patient Scenario for Single Match Found		
The EHR should demonstrate the ability to query an existing patient to the facility or hospital with immunizations documented in the EHR that are not reported to the CIR; the EHR should also demonstrate the ability to reconcile the EHR immunization record with the CIR immunization record.		
Demonstrate with test patient BartKid Test, there should be 1 Hep B documented on 11/17/2011 and MMR (94) documented on 12/02/2012 within the EHR, not reported to the CIR.		**Provide your answer below**
2.1. Display the existing immunizations that are documented in EHR		
2.2. Query **BartKid Test**		
2.3. Demonstrate how the immunization data shows for both the EHR record and the CIR record in the EHR		
Question 1.	Can the end users see both immunization records (immunization existing in the EHR and the immunizations return by the CIR) in the EHR on one screen?	Yes/No
Question 2.	Can the end user understand what immunizations were returned by the CIR?	Yes/No
Question 3.	Can the end user report immunizations that are missing in the CIR immunization record by retriggering manually?	Yes/No
Any additional notes on how the EHR immunization History reconciliation process:		

6. Single Match Found with Warning		
The EHR should demonstrate the ability to query a patient and display the historical immunizations that were evaluated by the CIR even with a warning returned.		
Demonstrate with test patient BabyHuey Test, with the address ONE FIRST STREET APARTMENT WITH REALLY LONG ADDRESS FOR NON-FATAL ERROR within the EHR.		**Provide your answer below**
3.1. Query **BabyHuey Test**		
3.2. Demonstrate how the immunization data shows in the EHR for **BabyHuey Test** immunization history in the CIR		
Question 1.	Does the EHR display the CIR's immunization history for BabyHuey Test?	Yes/No
Question 2.	Does the EHR show the warning message from the CIR?	Yes/No
Any additional notes on how the EHR handles CIR RSP non-fatal errors?		

7. Too Many Found		
The EHR should demonstrate the ability to query a patient where multiple patients are found due to similar demographic data elements. The CIR will return a Z33 in MSH-21 and if no error a TM in QAK-2.		
Note: Best practice for end users to use their Online Registry account to query patient if too many patient found as the next step.		
Demonstrate with test patient Too Many Test.		**Provide your answer below**
7.1. Query **Too Many Test**		
Question 1.	Does the EHR display a message indicating there was no single CIR match found?	Yes/No
Question 2.	Is there a way to re-query in the EHR with additional demographics?	Yes/No
Any additional notes on how the CIR Immunization Too Many Found matches in the EHR Patient record:		

8. No Patient Found		
Using a test patient that does not exist in the CIR, send a query and display what the end user's see if the CIR returns a MSH-21 value of Z33		
Note: Best practice for end users to use their Online Registry account to query patient if no patient is found as the next step.		
Demonstrate with test patient that was created in the EHR and does not exist in the CIR		**Provide your answer below**
8.1 Query the EHR's Test Patient		
Question 1.	Does the EHR display a message indicating there was no CIR match found?	Yes/No
Question 2.	Is there a way to re-query in the EHR with additional demographic?	Yes/No
Any additional notes on how the CIR Immunization Forecasting and Recommendation is added to the EHR Patient record:		

HL7 QBP Format

Create query messages based on either Immunization Messaging Standard Z34 Profile or Z44 Profile and specific CIR test data. This section will break apart the HL7 QBP message.

Message Header Segment (MSH) in a QBP

SEQ	Element Name	CIR IG Usage	CIR Element Data Reference	CIR HL7 notes	Example
MSH-1	**Field Separator**	R	**MSH**		**MSH|**
MSH-2	**Encoding Characters**	R	**^~\&**	An escape may be needed for the ampersand.	**^~\&**
MSH-3	**Sending Application**	RE	EHR/Interface Application Name		**PatientsFirstv3.1**
MSH-4	**Sending Facility**	R	**CIR Facility Code**		**8000N70**
MSH-5	**Receiving Application**	RE	NYC DOHMH		NYCDOHMH
MSH-6	**Receiving Facility**	RE	NYC DOHMH		NYCDOHMH
MSH-7	**Date/Time Of Message**	R	**DATETIME-TIMEZONE**		**20181001083105-0400**
MSH-8	**Security**	O			
MSH-9	**Message Type**	R	**QBP^Q11^QBP_Q11**		**QBP^Q11^QBP_Q11**
MSH-10	**Message Control ID**	R	**Unique Message Control ID**		**MatchSuccessful-01**
MSH-11	**Processing ID**	R	**Processing ID based on Production or UAT**		**T**
MSH-12	**Version ID**	R	**2.5.1**		**2.5.1**
MSH-15	**Accept Acknowledgement Type**	RE			ER
MSH-16	**Application Acknowledgment Type**	RE			AL
MSH-21	**Message Profile Identifier**	RE		Must be either Z34 (request Immunization History) or Z44 (Request Immunization History and Forecast) Profile and match QPD-1	**Z34^CDCPHINVS**
MSH-22	**Sending Responsible Organization**	RE	**CIR Facility Code of the query initiator**	This facility code may be different from the sending facility if the sender is transmitting for multiple locations within the same provider organization.	**8000N70**

MSH example: MSH|^~\&|PatientsFirstv3.1|8000N70|NYCDOHMH|NYC DOHMH|20181001083105-0400||QBP^Q11^QBP_Q11|MatchSuccessful-01|T|2.5.1|||ER|AL|||||Z34^CDCPHINVS|8000N70|

Query Parameter Definition Segment (QPD) in a QBP

SEQ	Element Name	CIR IG Usage	CIR Element Data Reference	CIR HL7 notes	Example
QPD-1	**Message Query Name**	R	Query Profile ID	Must be either Z34 (request Immunization History) or Z44 (Request Immunization History and Forecast) Profile and match MSH-21	**Z34^Request Immunization History^HL70471^CDCPHINVS OR Z44^Request Immunization History and Forecast^CDCPHINVS**
QPD-2	**Query Tag**	R	Unique Query ID from Senders System	Similar to Message control ID. Cannot be blank. May be different from message control ID.	**MatchSuccessful-01**
QPD-3	**Patient List**	RE	Patient IDs	Patient MR, LR, MA or MC. May be left blank if patient identifier is unknown or is not one of the four acceptable identifiers.	**M882894^^^8000N70^MR**
QPD-4	**Patient Name**	R	Patient Last Name, Middle Name and First Name		**MASON^MATTHEW^THOMAS ^^^^L**
QPD-5	**Patient Mother Maiden Name**	RE	Patient Mother's Maiden Name		
QPD-6	**Patient Date of Birth**	R	Date of Birth in YYYYMMDD format		**20121015**
QPD-7	**Patient Sex**	RE	Administrative Sex		**M**
QPD-8	**Patient Address**	RE		Including patient's address in the query will improve matching rates.	**305 BIG APPLE BLVD^7C^NY^NY^12345-2058^US^^^L**
QPD-9	**Patient Home Phone, Cell phone and/or Email**	RE		The more demographic information is included, the greater the possibility of matching.	^PRN^CP^^^999^5551313~ ^ORN^PH^^^212^5551212~ ^NET^X.400^rebecca.mason @isp.com
QPD-10	**Patient Multiple Birth Indicator**	RE		Advised for this field to be populated to accurately match on twins.	**Y**
QPD-11	**Patient Birth Order**	RE			**2**

QPD Example: QPD|Z34^Request Immunization History^CDCPHINVS|MatchSuccessful-01|M882894^^^8000N70^MR|MASON^MATTHEW^THOMAS^^^^L||20121015|M|305 BIG APPLE BLVD^7C^NY^NY^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

Response Control Parameter (RCP) in a QBP

SEQ	Element Name	CIR IG Usage	CIR Element Data Reference	CIR HL7 notes	Valid
RCP-1	**Query Priority**	O			**I**
RCP-2	**Quantity Limited Request**	O			**10**
RCP-3	**Response Modality**	O			**RD**
RCP-4	**Execution and Delivery Time**	O			R

Note: The RCP Segment is required for a successful query, but fields can be empty.

RCP Example: RCP|I|10^RD HL70126|R|

Well Formed CIR HL7 QBP Message Example

MSH|^~\&|PatientsFirstv3.1|9009Q00|NYCDOHMH|NYCDOHMH|20181001083105-0400||QBP^Q11^QBP_Q11|MatchSuccessful-01|T|2.5.1|||ER|AL|||||Z34^CDCPHINVS|8000N70
QPD|Z34^Request Immunization History^CDCPHINVS|MatchSuccessful-01|M882894^^^8000N70^MR|MASON^MATTHEW^THOMAS^^^^L||20121015|M|305 BIG APPLE BLVD^7C^NY^NY^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|
RCP|I|10^RD HL70126|R|

LOINC codes

When mapping CIR RSP immunization information, use the following LOINC Codes to convey the evaluated immunization history, forecasting, and recommendations.

RSP Scope	OBX-3 Concept Code	HL7 Description	Communication Context	OBX-5 Value
History	38890-0	Component Vaccine Type	Communicates historically administered vaccine doses.	CVX Code Administered
History	59781-5	Dose validity	Communicates historically administered vaccine dose validity as invalid or valid based on the patient's age and immunization history in the CIR.	N - for Not Valid or Y - for Valid
History	30982-3	Reason applied by forecast logic to project this vaccine	Communicates the reason for the historically administered vaccine dose was evaluated as invalid by the CIR. This will only be returned for invalid doses.	NYCDOH INV SHOT Codes
Forecast	59779-9	Immunization Schedule used	Communicates Vaccine Schedule Used.	VXC16^ACIP Schedule^CDCPHINVS
Forecast	30979-9	Vaccine Due Next	Communicates the Recommended Vaccine.	CVX Code of Recommended Vaccine
Forecast	30980-7	Date vaccine due	Communicates the Recommended Vaccine Due Date.	DUE DATE in YYYYMMDD format
Forecast	59778-1	Overdue date	This value represents the date when the next dose is considered overdue.	YYYYMMDD
Forecast	30981-5	Earliest date to give	This value represents the earliest possible date the next dose could be given.	YYYYMMDD

RSP Scope	OBX-3 Concept Code	HL7 Description	Communication Context	OBX-5 Value
Recommendations	30956-7	Vaccine Type	Communicates the Recommended Vaccine.	CVX Code of Recommended Vaccine. Mostly NOS CVX codes to represent the vaccine group.
Recommendations	59783-1	Vaccine Group Recommendation Status / Status in immunization series	Communicates Vaccine Group Not Recommended.	LA4695-8^No longer Recommended^LN
			Communicates Vaccine Group Conditionally Recommended.	LA13422-3^On Schedule/Not complete^LN
			Communicates Vaccine Group is not recommended because patient is too old to receive the dose.	LA13424-9^Too old - cannot complete the series because the latest age for receiving dose has passed^LN
			Communicates that the person is late getting the next dose in the series.	LA13423-1^Overdue^LN
			Communicates Completed Vaccine Group. All required doses have been received to meet the requirements for a particular vaccine group.	LA13421-5^Complete^LN

RSP Scope	OBX-3 Concept Code	HL7 Description	HL7 Example
History	38890-0	Component Vaccine Type	OBX|1|CE|**38890-0**^Component Vaccine Type^LN|1|**08**^Hep B, adolescent or pediatric^CVX|||||F|
History	59781-5	Dose validity	OBX|2|ID|**59781-5**^Dose Validity^LN|1|**N**|||||F|
History	30982-3	Reason applied by forecast logic to project this vaccine	OBX|3|CE|**30982-3**^Reason applied by forecast logic to project this vaccine^LN|1|**1005**^This immunization event occurred prior to the recommended age or recommended interval for this dose.^NYCDOHINVSHOTCODES|||||F|
Forecast	59779-9	Immunization Schedule used	OBX|4|CE|**59779-9**^Immunization Schedule used^LN|1|**VXC16**^ACIP Schedule^CDCPHINVS|||||F|||20220822142545|
Forecast	30979-9	Vaccine Due Next	OBX|1|CE|**30979-9**^Vaccine due next^LN|1|**108**^MenACWY NOS^CVX|||||F|||20220822142545|
Forecast	30980-7	Date vaccine due	OBX|2|DT|**30980-7**^Recommended due date^LN|1|**20290107**|||||F|||20220822142545|
Forecast	59778-1	Overdue date	OBX|4|DT|**59778-1**^Overdue date^LN|1|**20310203**|||||F|||20220822142545|
Forecast	30981-5	Earliest date to give	OBX|3|DT|**30981-5**^Earliest date^LN|1|**20290107**|||||F|||20220822142545|
Recommendations	30956-7	Vaccine Type	OBX|1|CE|**30956-7**^Vaccine Type^LN|1|**89**^Polio NOS^CVX|||||F|||20220822142545|
Recommendations	59783-1	Vaccine Group Recommendation Status / Status in immunization series	OBX|2|CE|**59783-1**^Vaccine Group Recommendation Status^LN|1|**LA4695-8**^No longer Recommended^LN|||||F|||20220822142545|
			OBX|5|CE|**59783-1**^Vaccine Group Recommendation Status^LN|1|**LA13422-3**^On Schedule/Not complete^LN|||||F|||20220822142545|
			OBX|2|CE|**59783-1**^Vaccine Group Recommendation Status^LN|1|**LA13424-9**^Too old - cannot complete the series because the latest age for receiving dose has passed^LN|||||F|||20220822155634|
			OBX|3|CE|**59783-1**^Vaccine Group Recommendation Status^LN|1|**LA13423-1**^Overdue^LN|||||F|||20220822142545|
			OBX|2|CE|**59783-1**^Vaccine Group Recommendation Status^LN|1|**LA13421-5**^Complete^LN|||||F|||20220822142545|

Invalid Dose Codes

When the CIR evaluates an immunization event, the dose may be invalid for many reasons. It is important to incorporate the invalid dose reasons so the end users can make the best decisions. The CIR will always communicate an OBX-3 value of 30989-3 and OBX-5 will communicate the reason the dose was evaluated as invalid. Use the following codes returned by the CIR to convey the reason for an invalid dose determination for an immunization event, when an OBX-3 is valued with 30982-3. CIR uses the below CIR-created codes.

OBX-3 Value	OBX-5 Value	CIR Invalid Dose Reasons
30982-3	1001	The age of this patient was below the recommended minimum age of the vaccine.
	1002	This immunization event occurred prior to the recommended age or recommended interval for this dose.
	1003	
	1004	
	1005	
	1006	The current immunization schedule does not support this vaccine, series and dose number combination.
	1007	The age of this patient exceeds the max age of the series based on the current immunization schedule.
	1008	The system only evaluates events which were administered when the patient was under 8 years old.
	1009	This immunization event was an extra dose since it occurred after this series was completed.
	1010	The system was unable to produce a recommendation based on the immunization history of this patient.
	1011	The system was unable to process this event due to the structure of the curr immunization schedule.
	1012	This imm. occurred prior to the min recommended interval for admin. of another live virus vaccine.
	1013	This vaccine series is not applicable based on the date of birth of this patient.
	1014	The vaccine season has passed.
	1015	The vaccine has already been given as many times as allowed during this season.
	1016	This vaccine is not currently licensed for this age.
	1017	This vaccine is currently licensed only for use in females.
	1018	Before Vaccine Min Age.
	1019	Past Vaccine Max Age.
	1020	DTaP-Hib not accepted unless final dose in series, and other rules are followed.
	1021	Event rejected, Tdap previously accepted.
	1022	This vaccine is licensed for a single dose only.

	1023	Only one LAIV can be given at a time.
	1024	The imm. event occurred less than the minimum days after the administration of another vaccine.
	1025	Extra Dose. Contains no needed antigens.
	1029	OPV invalid after 4/2016; vaccine does not contain all 3 strains.
	1031	Vaccine not currently evaluated by CIR.
	1085	This vaccine contained insufficient antigen for the patient's age.
	1086	This immunization event was recorded prior to the date of birth.
	1087	This immunization event occurred prior to the specified minimum interval for this dose.
	1088	This patient was below the minimum age for this dose.
	1089	Extra dose.
	1090	Waiting for evaluation.
	1091	Accepted but unevaluated.
	1092	Proof of immunity.
	1105	Disease documented.
	1106	Above recommended age.
	1107	This immunization event occurred prior to the specified minimum interval for a live virus dose.
	1108	Invalid as a primary shot; valid only as a booster dose.
	1109	The vaccine is not allowed for this dose.
	1110	The timing of the administration of this shot does not follow the guidelines of the EUA regarding the minimum age and/or minimum interval.
	1111	The shot was a duplicate given on the same day.
	1112	The vaccine is not counted based on the most recent vaccine given.
	1113	Vaccine is not approved for use in the U.S..
	1114	Vaccine is not approved for use in the U.S. or by WHO.
	1115	The timing of the administration of this shot does not follow the guidelines regarding the minimum age or minimum interval.
	1116	The timing of the administration of this shot does not follow the guidelines regarding the minimum interval of 28 days required for an Additional Dose for immunocompromised patients or the minimum interval of 5 months required for the 1st Booster Dose.
	1117	The timing of the administration of this shot does not follow the guidelines regarding the minimum interval of 8 weeks required for the 1st Booster Dose.
	1118	The timing of the administration of this shot does not follow the guidelines regarding the minimum interval of 5 months required for the 1st Booster Dose.
	1119	This immunization event occurred after the specified maximum age for this vaccine.

	1120	The timing of the administration of this shot does not follow the guidelines regarding the minimum interval of 28 days required for an Additional Dose for immunocompromised patients or the minimum interval of 8 weeks required for a Booster Dose.
	1121	Vaccine not part of this series.

Best Practices for Displaying Citywide Immunization Registry Immunization Data and Recommendations

This section provides guidance on best practices for an EHR vendor to display CIR immunization data in a meaningful way to their end users. Sample EHR query screens can be viewed here. An immunization query screen should:

1. **Show Patient History**: A patient in the EHR with an existing CIR immunization record.
    a. Provide the ability for end users to view the CIR immunization history and any documented history in the EHR. Viewing the full patient immunization history (from EHR and CIR) on one screen provides the end user with a full history so the end user can review and add the information necessary to ensure the patient has a full immunization history documented in the EHR.
    b. This includes displaying invalid doses with the evaluation reason provided by the CIR. These doses should stand out to the end user for review. To understand all the invalid dose evaluation reason, review the Invalid Dose Code tab.
2. **Reconcile Patient Immunization Record**: Provides the ability for end users to update the patient's immunization record with the CIR immunization data. Note the CIR only returns the history and recommendations based on the CIR history and patient's age. If there are immunizations missing from the patient's CIR immunization record, the recommendations will not be accurate, so ensure any missing immunizations are reported to the CIR before querying for a patient's forecasting and recommendations.
3. **Display forecasting and recommendations**: Provides the ability for the end users to view a patient's immunization forecasting and recommendations in a clear and concise manner to provide an accurate immunization administration recommendation.
4. **Display message in EHR to end user to communicate No Matches Found, Too Many Matches and Failures**. Provides an auto-generated message in the EHR to communicate to end users if the query resulted in the following: No Matches, Too Many Matches Found, and Failure. For all three of these criteria there will be no PID segment present.
    a. Display message to end user for patients with No Matches Found. The EHR should auto generate a message like 'No exact match found' to communicate to end users the query resulted in No Matches Found result.
    b. Display message to end user for patients with Too Many Matches Found. The EHR should auto generate a message like 'No exact match found' or 'Too many matches found' to communicate to end users if the query resulted in a No Matches Found or Too Many Matches Found.
    c. Display message to end user when a query fails. The EHR should generate a message like ‘Patient lookup could not be performed at this time. Please try again later’. If a match is not found, the provider may try to look-up directly in the CIR's web portal (https://immunize.nyc/provider-client/servlet/PC).

NYC Health

Citywide Immunization Registry

Below is an example Query Screen from the CIR Online Registry with full immunization history (dose validity, forecast, and recommendations).

Immunization History

Event	1	2	3	4	5	Next Due
Influenza 5 Event/s	01/27/2021 Influenza, IIV3, IM, Presrv-free 18y 4m	08/24/2021 Influenza, IIV3, IM, Presrv-free 18y 11m	03/02/2022 1 Influenza, IIV3, IM 19y 5m	09/28/2022 Influenza, IIV3, IM 20y 0m	11/23/2022 1 Influenza-IIV4 IM,Prsrv-free(age varies) 20y 2m	DUE ON 07/01/2023 INFLUENZA
HepB 4 Event/s	09/03/2002 Hep B <20 yrs (Engerix, Recombivax) 0w 0d	11/03/2002 DTaP/HepB/IPV (Pediarix) 8w 5d	12/01/2002 2 Hep B <20 yrs (Engerix, Recombivax) 12w 5d	10/22/2021 Hep B >=20 yrs (Engerix, Recombivax) 19y 1m		Completed Vaccine Series
Rotavirus 0 Event/s						Not recommended after 8 months.
DTP 5 Event/s	11/03/2002 DTaP/HepB/IPV (Pediarix) 8w 5d	01/03/2003 DTaP-IPV (Kinrix; Quadracel) 17w 3d	03/03/2003 DTaP-IPV/Hib (PENTACEL) 6m 0w	12/07/2003 3 Tdap 15m 0w	09/03/2006 DTaP-IPV (Kinrix; Quadracel) 4y 0m	DUE NOW TDAP
Hib 1 Event/s	03/03/2003 DTaP-IPV/Hib (PENTACEL) 6m 0w					Not generally recommended at/after 5 years
Pneumococcal 1 Event/s	10/03/2021 Pneumococcal NOS 19y 1m					Not Generally Recommended
Polio 5 Event/s	11/03/2002 DTaP/HepB/IPV (Pediarix) 8w 5d	01/03/2003 DTaP-IPV (Kinrix; Quadracel) 17w 3d	03/03/2003 DTaP-IPV/Hib (PENTACEL) 6m 0w	09/03/2006 DTaP-IPV (Kinrix; Quadracel) 4y 0m	05/03/2022 1 OPV NOS 19y 8m	Completed Vaccine Series
MMR 2 Event/s	09/03/2003 MMR-Varicella 12m 0w	09/03/2006 MMR-Varicella 4y 0m				Completed Vaccine Series
Varicella 3 Event/s	09/03/2003 MMR-Varicella 12m 0w	09/03/2006 MMR-Varicella 4y 0m	11/01/2006 Disease/Immunity Reported 4			Completed Vaccine Series
Zoster 0 Event/s						Due on 09/03/2052 Zoster (shingles, Shingrix)
HepA 0 Event/s						Recommended for high risk groups
Meningococcal (MenACWY) 1 Event/s	09/07/2013 MenACWY Menactra (9 mo-55 y) 11y 0m					Recommended for high risk groups
Human Papillomavirus 5 Event/s	09/07/2013 Human Papillomavirus (HPV9-Gardasil 9) 11y 0m	03/03/2014 Human Papillomavirus (HPV9-Gardasil 9) 11y 6m	09/07/2017 1 Human Papillomavirus (HPV9-Gardasil 9) 15y 0m	12/01/2021 1 Human Papillomavirus (HPV9-Gardasil 9) 19y 2m	11/30/2022 1 Human Papillomavirus (HPV9-Gardasil 9) 20y 2m	Completed Vaccine Series
H1N1 Influenza 0 Event/s						No longer recommended
COVID-19 4 Event/s	02/01/2021 COVID-19, mRNA, 0.3 mL, 12+ yrs (Pfizer) 18y 4m	01/15/2022 Disease/Immunity Reported 4	05/18/2022 COVID-19, mRNA, 0.3 mL, 12+ yrs (Pfizer) 19y 8m	09/22/2022 COVID mRNA,30mcg,BivalentBstr12y+ Pfizer 20y 0m		Completed vaccine series
Orthopoxvirus 1 Event/s	08/01/2022 Vaccinia, smallpox monkeypox (Jynneos) 19y 10m					DUE NOW VACCINIA, SMALLPOX MONKEYPOX (JYNNEOS)

Other Vaccines

Other 1 Event/s	03/01/2021 BCG 18y 5m					

The information in the table below is not intended for use by schools, day care or camps.
Use the Print Reports or Pre-completed Forms tabs for those purposes.

Lead Test History

More useful lead information is available in the Tools section.

Event	Date	Test Type	BLL	Recommendation
	There are no lead tests reported for this patient.			Assess all pregnant women at their first prenatal visit, provide education to prevent exposure and test those at risk. Test any adult at risk for lead exposure from work, hobbies or use of lead-containing products.

Tip

- To report a blood lead level (BLL) ≥3.5µg/dL or to add a missing BLL, use the "Add/Edit" feature above.
- To amend an incorrect BLL, fax the test result to 347-396-8935.
- Note that BLL values are rounded to the nearest integer (e.g. a BLL of 3.5µg/dL is rounded up to 4µg/dL, and a BLL of 9.4µg/dL is rounded down to 9µg/dL).
- Also, note that qualifiers (e.g. "<") are not displayed.
- For more information on lead poisoning, call 311 or go to www.nyc.gov/lead.

The immunization data and/or lead test data furnished herein have been reported to the Citywide Immunization Registry and/or the Lead Poisoning Prevention Program. There may be relevant events (e.g. other immunizations, adverse events, lead tests) that have not been reported to this authority. Clinical judgment should be used in reviewing the presented information in conjunction with any other information which may be available.

The information in this report is confidential and may only be used or disclosed in accordance with the NYC Health Code, Section 11.11.

Footnotes
1 : This immunization event was an extra dose since it occurred after this series was completed.
2 : This immunization event occurred prior to the recommended age or recommended interval for this dose.
3 : This vaccine is not currently licensed for this age.
4 : Reported as having had the disease or having a positive titer or serology.

RSP Message Breakdown

Matching Patient found

Receive RSP (Z32 or Z42 Profile) and display matching patient found and their evaluated immunization history from the CIR.

RSP Structure

First 4 Segments

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS fde8111|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220902102600-0400||RSP^K11^RSP_K11|20220902102600-0400CIR-WS:788408952|T|2.5.1|||NE|NE||||Z32^CDCPHINVS|8000N70| or MSH|^~\&|CIR HL7 WS fde8111|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220902102805-0400||RSP^K11^RSP_K11|20220902102805-0400CIR-WS:788408952|T|2.5.1|||NE|NE||||Z42^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate message status and Message Control ID.	MSA|AA|QT-MatchSuccessful-01|
QAK		If the message has no errors and a single match was found the QAK-2 will always be valued with OK. Reminder, whether a request for immunization history or immunization history with forecast, we always return both.	QAK|MatchSuccessful-01|OK|**Z34**^Request Immunization History^CDCPHINVS| or QAK|MatchSuccessful-01|OK|**Z44**^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP repeats QPD fields of the Sender's original QPD. The CIR will always repeat as is.	QPD|Z34^Request Immunization History^CDCPHINVS|MatchSuccessful-01|M882894^^^8000N70^MR|MASON^MATTHEW^THOMAS^^^^L||20121015|M|305 BIG APPLE BLVD^7C^NY^NY^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

Patient Found Demographic Segment

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
PID	**CIR's patient match details**	If the patient is found and has immunization history, after the PID segment it will always be followed by a group of triplets (1 ORC, 1 RXA and minimum of 1 OBX segments) for each administered vaccine listed in chronological order. Note the CIR Web Service can find a Single Patient Match that does not contain Immunization History. The CIR will return the CIR unique ID as well as the MRN if the sender previously reported it. The CIR will always return the patient's first name, last name, middle name, sex at birth, address, and phone numbers.	PID|1||788408952^^^BAA^LR~M882894^^^8000N70^MR||MASON^MATTHEW^THOMAS^^^^L||20121015|M|||305 BIG APPLE BLVD^7C^NEW YORK^NY^12345-1234^^C||^ORN^CP^^^927^5551313~^PRN^PH^^^212^5551212|

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
ORC	**Patient's Immunization History is grouped by triplets - Valid Non-combo vaccine administration**	The RSP will follow with the immunization history when a patient match is found. Again, this returned by a group of triplets (1 ORC, 1 RXA and minimum of 2 OBX segments) for each administered vaccine listed in chronological order. The first segment is the ORC segment, which provides information about the provider. If the patient has immunization history, the first **ORC-3 field is valued with the CIR Immunization ID** and **ORC-12 will be valued with the Ordering Physician**, which can be the provider submitted with the vaccination or if there is no ordering provider, the provider self-reported by the facility as the primary provider.	ORC|RE||**115273054**^NYC-CIR|||||||||^**JONES^LISA**|
RXA		The second segment within the triplet is the RXA. Similar to a VXU message, the **RXA-3** and **RXA-4** will be valued with the **Immunization Administration Date**. The start and end administration date will always be the same. **RXA-5** will be valued with the **CVX vaccine code**. If the CIR received the following fields from the administrating provider, it will also be valued in the RSP: RXA-15 will be valued with the Lot #, RXA-16 will be valued with expiration date, RXA-17 will be valued with the MVX code, and RXA-11.4 will be valued with the administering location name. RXA-20 will always be complete (CP) for a vaccine administration. The CIR will not return vaccination refusals nor partially administered doses. The CIR will return non-administered information such as disease immunity. An example of this will be provided in the next triplet.	RXA|0|1|**20210223**|**20210223**|**10^IPV^CVX**|999|||00^New immunization record^NIP001||^^^***Queens Clinic Test**||||**W2348796456**|**20210731**|**MSD^Merck Co, Inc.^MVX**|||CP|
OBX		The third segment within the triplet set is the OBX. There will always be a minimum of two OBX segments. If the vaccine only has 1 component, meaning it is <u>not</u> a combo vaccine, it will only have one **OBX-3** with 38890-0. **OBX-5** will contain the CVX code.	OBX|1|CE|**38890-0^Component Vaccine Type^LN**|1|**10^IPV^CVX**|||||F|
OBX		OBX segment that will always be returned next is the dose validity. **OBX -3** will be valued with the LOINC code for dose validity, **59781-5**. **OBX-5** will be valued with **Y for Valid or N for Not Valid.**	OBX|2|ID|**59781-5^Dose Validity^LN**|1|**Y**|||||F|

History Invalid Combo

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
ORC	**Next Triplet - Combo historical vaccine administration with Invalid dose**	The second **ORC-3 field is valued with the CIR Immunization ID** and **ORC-12 will be valued with the Ordering Physician**, if successfully reporting in ORC-12, or the default provider for that CIR Facility.	ORC|RE||**137872369^NYC-CIR**|||||||||^**UNKNOWN55^UNKNOWN56**|
RXA		Similar to a VXU message, The **RXA-3** and **RXA-4** will be valued with the Immunization Administration Date. **RXA-5** will be valued with the **CVX code**. This immunization was not reported with either Lot # or Expiration date because it was not administered by the reporting provider.	RXA|0|1|**20151027**|**20151027**|**50^DTaP/Hib (TriHIBit)^CVX**|999|||01^Historical information-source unspecified^NIP001||^^^Unknown||||||||CP|
OBX		This a combination vaccine containing DTaP and Hib. So there should be two **OBX-3 value of 38890-0**; each with an **OBX-5** value of the **CVX code** for DTAP and Hib components.	OBX|1|CE|**38890-0^Component Vaccine Type^LN**|1|**20^DTaP^CVX**|||||F|
OBX		The next OBX segment will return the validity of the dose based on clinical decision engine. **OBX-3** will be valued with the LOINC code for dose validity, **59781-5**. **OBX-5** will be valued with **Y for Valid or N for Not Valid.**	OBX|2|ID|**59781-5^Dose Validity^LN**|1|**Y**|||||F|
OBX		Since, this is a combination vaccine, this next OBX will for the Hib component.	OBX|3|CE|**38890-0^Component Vaccine Type^LN**|2|**48^Hib (ActHib; Hiberix)^CVX**|||||F|
OBX		**OBX-3 value of 59781-5** means that one or all of the vaccine contain an invalid dose based on the immunization schedule and **OBX-5** will always be valued with **N.**	OBX|4|ID|**59781-5**^Dose Validity^LN|2|**N**|||||F|
OBX		After an invalid doses, even from a component vaccine, the next **OBX-3** contains **30982-3** and **OBX-5** will be valued with the CIR invalid error code followed by the reason the dose was marked invalid.	OBX|5|CE|**30982-3**^Reason applied by forecast logic to project this vaccine^LN|2|**1020^DTaP-Hib not accepted unless final dose in series, and other rules are followed**.^NYCDOHINVSHOTCODES|||||F|
OBX		**OBX-3 LOINC value of 59779-9** communicates the schedule used to evaluate the historical vaccine whenever the dose was found to be invalid.	OBX|6|CE|**59779-9^Immunization Schedule used^LN**|2|**VXC16^ACIP^CDCPHINVS**|||||F|

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
ORC	**Third Triplet - Disease Immunity**	The third **ORC-3 field is valued with 9999** when communicating a non-administration event. **ORC-12 will be valued with the Ordering Physician**, if successfully reporting in ORC-12, or the default provider for that CIR Facility.	ORC|RE||**9999**^NYC-CIR||||||||**^STERN^MARGARET**|
RXA		**RXA-3** will be valued with the **Immunity Observed Date**. **RXA-5** will be valued with **998** indicating that there is no vaccine administration. The following OBX segment will provide information about the immunity observed event.	RXA|0|1|20171201||**998^No vaccine administered^CVX**|999|
OBX		**OBX-3** will be valued with **59784-9** for disease with presumed immunity or with **75505-8** for disease with evidence immunity. **OBX-5** will communicate which disease the patient has immunity against after overcoming the disease. **OBX-5** will be valued with a snomed code. OBX-14 will also be valued with the **Immunity Observed Date**.	OBX|1|CE|**59784-9^Disease with presumed immunity^LN**|1|**38907003^History of Varicella infection^SCT**|||||F|||**20171201**|

Segment	High-level definition	CIR HL7 notes	CIR HL7 Example:
ORC	**Forecast and Recommendation**	**ORC-3** will be valued with **9999** to indicate that the next triplet group will not communicate a vaccine administration. ORC-12 will be empty.	ORC|RE||**9999**^NYC-CIR|
RXA		**RXA-3** and **RXA-4** will be valued with the date the forecast was calculated. **RXA-5** will be populated with **998**, indicating that there was no vaccine administration event.	RXA|0|1|**20220919185543**|**20220919185543**|**998^No vaccine administered^CVX**|999||||||||||||NA|
OBX		The following OBX segment will be indicate the vaccine that is due next. **OBX-3** will contain LOINC code **30797-9** and **OBX-5** will have the nonspecific CVX vaccine code representing the vaccine group.	OBX|1|CE|**30979-9^Vaccine due next^LN**|1|**88^Influenza NOS^CVX**|||||F|||20220919185543|
OBX		Following the vaccine that is due, this OBX segment will communicate when that vaccine is recommended to be administered. **OBX-3** will be valued with **30980-7** for recommended due date. **OBX-5** will contain the date that the vaccine is recommended to be administered.	OBX|2|DT|**30980-7^Recommended due date^LN**|1|**20220701**|||||F|||20220919185543|
OBX		The CIR will also return the earliest date a vaccine may be administered. **OBX-3** will be valued with LOINC code **30981-5** for earliest date. **OBX-5** will contain the date that the vaccine can be administered.	OBX|3|DT|**30981-5^Earliest date^LN**|1|**20220701**|||||F|||20220919185543|
OBX		The CIR also returns recommendation status about the vaccine. In this case, the next influenza dose is overdue. **OBX-3** is populated with **59783-1** for **vaccine group recommendation** and **OBX-5** is populated with one of five recommendation statuses.	OBX|4|CE|**59783-1^Vaccine Group Recommendation Status^LN**|1|**LA13423-1^Overdue^LN**|||||F|||20220919185543|
OBX		Like with an invalid dose reason, a vaccine recommendation ends with the immunization schedule used to evaluate.	OBX|5|CE|**59779-9^Immunization Schedule used^LN**|1|**VXC16^ACIP Schedule^CDCPHINVS**|||||F|||20220919185543|

Matching Patient Found with Non-fatal Error(s)

Receive RSP (Z32 or Z42 Profile) and display matching patient found and their evaluated immunization history from the CIR, with non-fatal error(s).

RSP Structure

First 4 Segments + ERR(s)

Segment	High-level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the Query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS a84c3b3|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220919202637-0400||RSP^K11^RSP_K11|20220919202637-0400CIR-WS:788408952|T|2.5.1|||NE|NE||||Z32^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate message status (MSA-1) and return the Message Control ID (MSA-2). **AE** indicates that there was a non-fatal error in the submitted QBP message.	MSA|**AE**|**MatchSuccessful_with_warning-01**|
ERR		**ERR-2** will communicate the **Segment Name**, **Segment Sequence**, **Field Position**, **Field Repetition**, and **Component Number.** **The CIR will return ALL errors. The CIR does divert from the current HL7 2.5.1 national guide here. The CIR also does not currently return standard error codes. The CIR currently works to meet the national standard.** **ERR-3** will communicate the **Error Code** and **description** **ERR-4** will communicate **severity level**. If ERR-4 is valued with W for Warning due to a non-fatal error and if valued with an E, for an Error due to a fatal in the message. **ERR-8** will communicate a human-readable description of the error, the CIR HL7 Web Service will value this field with **segment name and field containing the error** followed by a **short description of the error**. If there are any errors non-fatal and fatal, an ERR segment will appear for each error to communicate the details of the error.	ERR||QPD^1^8^1^5|102^**Data type error**^HL70357|**W**|ValueMissing^^HL70357|||**Patient_Address_Zip: ValueMissing**| ERR||QPD^1^8^1^1^2|102^**Data type error**^HL70357|**W**|ValueExceedMaxLen^^HL70357|||**Patient_Address_Street: ValueExceedMaxLen**|
QAK		If there are errors in the message and a patient is found QAK-2 will be valued with an **OK.**	QAK|MatchSuccessful_with_warning-01|**OK**|Z34^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP will echo QPD fields of the Sender's original QPD.	QPD|Z34^Request Immunization History^CDCPHINVS|MatchSuccessful-01|M882894^^^8000N70^MR|MASON^MATTHEW^THOMAS^^^^L||20121015|M|305 BIG APPLE BLVDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD^7C^NY^NY^^US^^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

Patient Found Demographic Segment

Segment	High-level Definition	CIR HL7 notes	CIR HL7 Example:
PID	**CIR's patient match details**	If the patient is found and has immunization history, after the PID segment it will always be followed by a group of triplets (1 ORC, 1 RXA and minimum of 1 OBX segments) for each administered vaccine listed in chronological order. Please note the CIR Web Service can find a Single Patient Match that does not contain Immunization History. The CIR will return the CIR unique ID as well as the MRN if the sender previously reported it. The CIR will always return the patient's first name last name, middle name, sex at birth, address, and phone numbers.	**PID|1||788408952^^^BAA^LR~M882894^^^8000N70^MR||MASON^MATTHEW^THOMAS^^^^L||20121015|M|||305 BIG APPLE BLVD^7C^NEW YORK^NY^12345-1234^^C||^ORN^CP^^^927^5551313~^PRN^PH^^^212^5551212|**

For all other possible segments returned, see Matching patient found - History Valid Non-combo, History Invalid Combo, Disease Immunity, and Forecast and Recommendations.

No Patient Match

Receive RSP (Z33 Profile) and display no patient found outcome

RSP Structure

First 4 Segments

SEGMENT	High-level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the Query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS a84c3b3|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220919205319-0400||RSP^K11^RSP_K11|20220919205319-0400CIR-WS|T|2.5.1|||NE|NE||||Z33^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate message status and Message Control ID.	MSA|**AA**|**No match found_01**|
QAK		If there are no errors in the message and no patient is found QAK-2 will be valued with **NF.**	QAK|No match found_01|**NF**|Z34^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP will echo QPD fields of the Sender's original QPD.	QPD|Z34^Request Immunization History^CDCPHINVS|MatchSuccessful-01|12345^^^^MR|MONDAY^WEDNESDAY^TUESDAY^^^^L||20131015|M|405 GREEN APPLE BLVD^8C^NY^NY^12345-2058^US^^^L|^PRN^CP^^^111^5551313~^ORN^PH^^^212^5551212~^NET^X.400^mom.mason@isp.com|

No Patient Match with Non-fatal Error(s)

RSP Structure

First 4 Segments + ERR(s)

SEGMENT	High-level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the Query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS a84c3b3|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220920162954-0400||RSP^K11^RSP_K11|20220920162954-0400CIR-WS|T|2.5.1|||NE|NE||||Z33^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate **message status** and **Message Control ID**. AE message status stands for application error. We return an AE when there are either non-fatal and/or fatal errors.	MSA|**AE**|**No match with warning-01**|
ERR		**ERR-2** will communicate the **Segment Name, Segment Sequence, Field Position, Field Repetition, and Component Number. The CIR will return ALL errors. The CIR does divert from the current HL7 2.5.1 national guide here. The CIR also does not currently return standard error codes. The CIR currently works to meet the national standard.** **ERR-3** will communicate the **Error Code and description.** **ERR-4** will communicate severity level. If **ERR-4** is valued with **W** for **Warning** due to a non-fatal error and if valued with an **E**, for an **Error** due to a fatal in the message. **ERR-8** will communicate a **human-readable description of the error**, the CIR HL7 Web Service will value this field with segment name and field containing the error followed by a short description of the error. If there are any errors non-fatal and fatal, an ERR segment will appear for each error to communicate the details of the error.	ERR||QPD^1^8^1^1^2|102^**Data type error**^HL70357|**W**|Transliterated^^HL70357|||**Patient_Address_Street: Transliterated**| ERR||QPD^1^8^1^4|102^**Data type error**^HL70357|**W**|ValueExceedMaxLen^^HL70357|||**Patient_Address_State: ValueExceedMaxLen**|
QAK		If there are only non-fatal errors in the message and no patient is found QAK-2 will be valued with **NF**. If there are fatal errors which indicates a severe enough error occured to prevent the search from successfully executing , ERR-4=E, then QAK-2 will be **AE**.	QAK|**No match with warning-01**|**NF**|Z34^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP will echo QPD fields of the Sender's original QPD.	QPD|Z34^Request Immunization History^CDCPHINVS|**No match with warning-01**|M882894^^^8000N70^MR|MONDAY^TUESD^WED^^^^L|||F|44 BIG ÀPPLE BLVD^7C^NY^NYAC^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

No Patient Match with Fatal Error(s)

RSP Structure

First 4 Segments + ERR(s)

SEGMENT	High-level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the Query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS a84c3b3|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220920162954-0400||RSP^K11^RSP_K11|20220920162954-0400CIR-WS|T|2.5.1|||NE|NE||||Z33^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate **message status** and **Message Control ID**. AE message status stands for application error. We return an AE when there are either non-fatal and/or fatal errors.	MSA|**AE**|**No match with fatal error-01**|
ERR		**ERR-2** will communicate the **Segment Name, Segment Sequence, Field Position, Field Repetition, and Component Number.** **The CIR will return ALL errors. The CIR does divert from the current HL7 2.5.1 national guide here. The CIR also does not currently return standard error codes. The CIR currently works to meet the national standard.** **ERR-3** will communicate the **Error Code and description.** **ERR-4** will communicate severity level. If **ERR-4** is valued with **W** for **Warning** due to a non-fatal error and if valued with an **E**, for an **Error** due to a fatal in the message. **ERR-8** will communicate a **human-readable description of the error**, the CIR HL7 Web Service will value this field with segment name and field containing the error followed by a short description of the error. If there are any errors non-fatal and fatal, an ERR segment will appear for each error to communicate the details of the error.	ERR||QPD^1^6^2|101^**Required field missing**^HL70357|**E**|RequiredField^^HL70357|||**Patient_DOB: RequiredField**| ERR||QPD^1^8^1^4|102^**Data type error**^HL70357|**W**|ValueExceedMaxLen^^HL70357|||**Patient_Address_State: ValueExceedMaxLen**|
QAK		If there is at least one fatal error in the message, no patient will be found and QAK-2, the **patient match status** will be valued with **AE**. A severe enough error occurred to prevent the search from successfully executing	QAK|No match with fatal error-01|**AE**|Z34^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP will echo QPD fields of the Sender's original QPD.	QPD|Z34^Request Immunization History^CDCPHINVS|No match with fatal error-01|M882894^^^8000N70^MR|MASON^MATTHEW^THOMAS^^^^L|||F|44 BIG APPLE BLVD^7C^NYAC^NYAC^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

Too Many Matches Found

Receive RSP (Z33 Profile) and display too many patients found outcome

RSP Structure

First 4 Segments + ERR(s)

SEGMENT	High Level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the Query and the original QBP Segment requested.	MSH|^~\&|CIR HL7 WS a84c3b3|NYC DOHMH|PatientsFirstv3.1|9009Q00|20220920170938-0400||RSP^K11^RSP_K11|20220920170938-0400CIR-WS|T|2.5.1|||NE|NE||||Z33^CDCPHINVS|8000N70|
MSA		Like a VXU ACK, the MSA Segment will communicate **message status** and **Message Control ID.**	MSA|AA|**Too many match-01**|
QAK		If QBP has no error the QAK will communicate **Query Tag ID** and **Status of match**. If there are no errors in the message QAK-2 will be valued with **TM**	QAK|**Too many match-01**|**TM**|Z34^Request Immunization History^CDCPHINVS|
QPD		The CIR RSP will echo QPD fields of the Sender's original QPD.	QPD|Z34^Request Immunization History^CDCPHINVS|Too many match-01|M882894^^^8000N70^MR|test^too many^^^^^L||20200101|F|18 Waverly^7C^NY^NY^12345-2058^US^^^L|^PRN^CP^^^999^5551313~^ORN^PH^^^212^5551212~^NET^X.400^rebecca.mason@isp.com|Y|2|

Message not parsed

Receive ACK indicating HL7 message format was not successfully parsed

RSP Structure

ACK

SEGMENT	High Level Definition	CIR HL7 notes	CIR HL7 Example:
MSH	**Provides the CIR's query message validation**	The first 4 segments of an RSP will communicate the status of the QBP message, the status of the patient match and the original QBP Segment requested.	MSH|^~\&|PatientsFirstv3.1|9009X01|NYCDOHMH|NYCDOHMH|20181001083105-0400||QBP^Q11^QBP_Q11**2**|HL7_message_not_parsable|P|2.5.1|||ER|AL||||Z34^CDCPHINVS|8000N70
MSA		The MSA Segment will communicate the **message status** and **Message Control ID.** MSA-1 value '**AR**' indicates that the query (QBP) message was not parsed successfully. The issue here is that the MSH-9 value has a '**2**' at the end of the string.	MSA|**AR**|**HL7_message_not_parsable**|
ERR		The ERR segment will provide a message stating that the message could not be parsed. The service was expecting a 'QBP^Q11^QBP_Q11' message and not a 'QBP^Q11^QBP_Q11**2**' message.	ERR|||207^Application internal error^HL70357|**E**||||Message can't be parsed to QBP_Q11 message|