



CRISP Immunizations

Version 7/24/2018

Overview

This document is used to define the process for onboarding to CRISP Immunizations. CRISP offers an Immunization service which allows practitioners to not only query for immunization data but upload immunization records. HL7 standards for Immunizations are followed for easy healthcare data sharing. CRISP acts as a passthrough between healthcare organizations and Maryland's Immunization Repository, ImmuNet. CRISP does not hold or maintain any immunization data for this integration.

Prerequisites

The CRISP Participating Organization must have the ability to interact with the CRISP APIs. This will often depend on the EMR that the Organization is leveraging.

Point of Contact

CRISP requires a technical Point of Contact (POC) on the Organization's end to work through the onboarding process. This POC will need to be able to test connectivity and test behavior of the APIs in both TEST and PROD environments.

Certificates

CRISP Participants will need the ability to create and pass a certificate with each call. This adds a layer of security to the integration. In TEST, this certificate can be self-signed. In PROD, this certificate must come from the Participant's Certificate Authority or be a 3rd party certificate. A single certificate should be used in only one environment. One certificate can be leveraged for multiple APIs in a single environment, meaning that if an organization has a certificate for another integration, it may also be used to exchange immunization data

Patient Identification

Immunet, Maryland's Immunization Repository, has patient matching guidelines for accepting the request.

Queries for immunization records occur by providing patient demographics, which is done on a 3-tier matching algorithm.

- Tier 1 Primary: First Name, Middle Name, Last Name, Date of Birth
- Tier 2 Secondary: Mother's Maiden Name
- Tier 3 Tertiary: Address and Phone

Testing and Implementation

Team

Organization Points of Contact:

CRISP Implementer:



Message Types and Workflows

Query by Parameter (QBP) – Call structure for querying Immunizations

Z34: Complete Immunization History

Z44: Evaluated Immunization History and Forecast

Response (RSP) – Sent in return to a QBP

Z31: List of patients with Demographics. Sent when there are multiple patient matches.

Z32: Complete Immunization History (response to Z34)

Z42: Evaluated Immunization History and Forecast (response to Z44)

Z33: Sent when there are no matches to the query (QBP)

Unsolicited Vaccination Record Update (VXU)

Z22: Used to add a new patient and must accompany an immunization record

Acknowledgement (ACK)

Z23: Sent in response to the VXU update message.

Testing

1. Establish connectivity between Organization and CRISP
 - a. TEST Certificate sent to CRISP
 - b. Confirm connectivity to Immunization Endpoints
2. Message Validation
 - a. Send test QBP message for test patient and verify receipt of RSP
 - b. Hospital/Provider can ingest the test RSP without errors

*This process will be completed several times to determine thorough testing
3. Organization confirms testing is complete with screenshots of messages and responses.

Move to Production

1. Confirm Change Control for Organization/Participant
2. Establish connectivity for Production
 - a. PROD Certificate sent to CRISP
3. Validate functionality in Production environment

Endpoints

CRISP Immunization Endpoints:

Test: <https://testapi.crisphealth.org/immunizations/byDemographics>

Prod: <https://api.crisphealth.org/immunizations/byDemographics>



Test Patients

| Immunizations Test Patients | | | | |
|-----------------------------|--------------|---------------|--------|---------------|
| Last Name | First Name | Date of Birth | Gender | Immunizations |
| Testpatient | John | 1/1/2006 | M | Yes |
| Mouse | Mickey | 10/5/1971 | F | Yes |
| Testlast | Testfirst | 2/9/1977 | F | Yes |
| Avery | Adele | 12/1/1997 | F | Yes |
| CRISP | Immunization | 1/1/1980 | M | No |

Sample Messages and Responses

Z34 Complete Immunization History (QBP)

Z34 Sample Call

- MSH Message Header
- QPD Query Parameter Definition Segment
- RCP Response Control Parameter

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:urn="urn:cdc:iisb:2011">
  <soap:Header/>
  <soap:Body>
    <urn:submitSingleMessage>
      <!--Optional:-->
      <urn:username>EnterUserName</urn:username>
      <!--Optional:-->
      <urn:password>Password</urn:password>
      <!--Optional:-->
      <urn:facilityID>161140606</urn:facilityID>
      <urn:hl7Message><![CDATA[MSH|^~\&|DIMN_MD|161141722|ImmuNet|CRISP|20180417135014-0400||QBP^Q11^QBP_Q11|20180417135014019002|P|2.5.1||||NE|AL||||Z34^CDCPHINVS|
QPD|Z34^Request Immunization History^CDCPHINVS|XDOC-1742593|588383^MR~4324597^MR|testpatient^john^L||20060101|||||
RCP||10^RD|R
]]></urn:hl7Message>
    </urn:submitSingleMessage>
  </soap:Body>
</soap:Envelope>
```



Z32 Sample Response

- MSH Message Header
- MSA Message Acknowledgment Segment
- [ERR] Error
- QAK Query Acknowledgment Segment
- QPD Query Parameter Definition Segment
- PID Patient Identification
- PD1 Patient Additional Demographic
- {NK1} Next of Kin / Associated Parties
- {ORC Common Order Segment
- RXA Pharmacy / Immunization administration
- [RXR] Pharmacy / Treatment Route
- [{OBX}] Observation / Result

```
<S:Envelope xmlns:S="http://www.w3.org/2003/05/soap-envelope">
  <S:Body>
    <submitSingleMessageResponse xmlns="urn:cdc:iisb:2011">
      <return>MSH|^~\&|IMMUNET2.17.0|IMMUNET|crisp|20180518143702-
0400||RSP^K11^RSP_K11|20180417135014019002|P|2.5.1|||NE|NE||||Z32^CDCPHINVS
MSA|AA|20180417135014019002
QAK|XDOC-1742593|OK|Z34^Request Complete Immunization history^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|XDOC-
1742593|588383^^^MR~4324597^^^MR|testpatient^john^^^L||20060101
PID|1||614599^^^SR~||TESTPATIENT^JOHN||20060101|M||2106-3|123 ABC
STREET^CLEVELAND^OH^44130^USA||^H^^216^5551213||||||2186-5||N|0
PD1|||||||02|N
NK1|1|TESTPATIENT^SUSAN|MTH^Mother^HL70063||^H^^216^5551213
NK1|2|TESTPATIENT^JOHN|FTH^Father^HL70063||^H^^216^5551213
ORC|RE||3402326
RXA|0|1|20150325|20150325|48^Hib-PRP-T^CVX^90648^Hib-PRP-
T^CPT|1.0|||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE ASSO|||TESTLOT||PMC^Sanofi
Pasteur Inc. (Connaught and Pasteur Merieux)^MVX|||A
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|48^Hib-PRP-T^CVX^90648^Hib-PRP-
T^CPT|||||F
OBX|2|NM|30973-2^Dose number in series^LN|1|777|||||F
ORC|RE||3402327
RXA|0|1|20150325|20150325|08^HepB pediatric^CVX^90744^HepB
pediatric^CPT|1.0|||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE
ASSO|||1231231123||WAL^Wyeth-Ayerst (Lederle and Praxis)^MVX|||A
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
```



```

OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|08^HepB-Peds^CVX^90744^HepB-
Peds^CPT|||||F
OBX|2|NM|30973-2^Dose number in series^LN|1|1|||||F
ORC|RE||3402328
RXA|0|1|20150521|20150521|20^DtaP^CVX^90700^DtaP^CPT|1.0||00|^DOCTOR^DEMO|^PEDIATRI
C HEALTHCARE ASSO|||121212121||AB^Abbott Laboratories (Ross Products Division)^MVX|||A
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT|||||F
OBX|2|NM|30973-2^Dose number in series^LN|1|777|||||F
ORC|RE||3402329
RXA|0|1|20150826|20150826|62^HPV, Quadrivalent^CVX^90649^HPV,
Quadrivalent^CPT|1.0||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE
ASSO|||TESTVFCLOT||MSD^Merck \T\ Co, Inc.^MVX|||A
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|62^HPV, Quadrivalent^CVX^90649^HPV,
Quadrivalent^CPT|||||F
OBX|2|NM|30973-2^Dose number in series^LN|1|1|||||F</return>
  </submitSingleMessageResponse>
</S:Body>
</S:Envelope>

```

Z44 Evaluated Immunization History and Forecast (QBP)

Z44 Sample Call

- MSH Message Header
- QPD Query Parameter Definition Segment
- RCP Response Control Parameter

```

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:urn="urn:cdc:iisb:2011">
  <soap:Header/>
  <soap:Body>
    <urn:submitSingleMessage>
      <!--Optional:-->
      <urn:username>UserName</urn:username>
      <!--Optional:-->
      <urn:password>Password</urn:password>
    </urn:submitSingleMessage>
  </soap:Body>
</soap:Envelope>

```



```

<!--Optional:-->
<urn:facilityID>161140606</urn:facilityID>
<urn:hl7Message><![CDATA[MSH|^~\&|DIMN_MD|161141722|ImmuNet|CRISP|20180417135014-
0400||QBP^Q11^QBP_Q11|20180417135014019002|P|2.5.1|||NE|AL||||Z44^CDCPHINVS|
QPD|Z44^Request Evaluated Immunization History and Forecast^CDCPHINVS|XDOC-
1742593|588383^^^MR~4324597^^^MR|testpatient^john^^^L||20060101|||||
RCP||10^RD|R
]]></urn:hl7Message>
</urn:submitSingleMessage>
</soap:Body>
</soap:Envelope>

```

Z42 Sample Response

- MSA Message Acknowledgment Segment
- [ERR] Error
- QAK Query Acknowledgment Segment
- QPD Query Parameter Definition Segment
- PID Patient Identification {ORC Common Order Segment
- RXA Pharmacy / Immunization administration
- [RXR] Pharmacy / Treatment Route
- [{OBX}] Observation / Result

```

<S:Envelope xmlns:S="http://www.w3.org/2003/05/soap-envelope">
  <S:Body>
    <submitSingleMessageResponse xmlns="urn:cdc:iisb:2011">
      <return>MSH|^~\&|IMMUNET2.17.0|IMMUNET||crisp|20180518143325-
0400||RSP^K11^RSP_K11|20180417135014019002|P|2.5.1|||NE|NE||||Z42^CDCPHINVS
MSA|AA|20180417135014019002
QAK|XDOC-1742593|OK|Z44^Request Evaluated Immunization History and Forecast^CDCPHINVS
QPD|Z44^Request Evaluated Immunization History and Forecast^CDCPHINVS|XDOC-
1742593|588383^^^MR~4324597^^^MR|testpatient^john^^^L||20060101
PID|1||614599^^^SR~||TESTPATIENT^JOHN||20060101|M||2106-3|123 ABC
STREET^CLEVELAND^OH^44130^USA||^H^^216^5551213||||||2186-5||N|0
ORC|RE||3402326
RXA|0|1|20150325|20150325|48^Hib-PRP-T^CVX^90648^Hib-PRP-
T^CPT|1.0|||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE ASSO||||TESTLOT||PMC^Sanofi Pasteur Inc.
(Connaught and Pasteur Merieux)^MVX||||A
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|48^Hib-PRP-T^CVX^90648^Hib-PRP-T^CPT|||||F

```



OBX|2|NM|30973-2^Dose number in series^LN|1|777|||||F
 ORC|RE||3402327
 RXA|0|1|20150325|20150325|08^HepB pediatric^CVX^90744^HepB pediatric^CPT|1.0||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE ASSO|||1231231123||WAL^Wyeth-Ayerst (Lederle and Praxis)^MVX|||A
 RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
 OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|08^HepB-Peds^CVX^90744^HepB-Peds^CPT|||||F
 OBX|2|NM|30973-2^Dose number in series^LN|1|1|||||F
 ORC|RE||3402328
 RXA|0|1|20150521|20150521|20^DtaP^CVX^90700^DtaP^CPT|1.0||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE ASSO|||121212121||AB^Abbott Laboratories (Ross Products Division)^MVX|||A
 RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
 OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT|||||F
 OBX|2|NM|30973-2^Dose number in series^LN|1|777|||||F
 ORC|RE||3402329
 RXA|0|1|20150826|20150826|62^HPV, Quadrivalent^CVX^90649^HPV, Quadrivalent^CPT|1.0||00|^DOCTOR^DEMO|^PEDIATRIC HEALTHCARE ASSO|||TESTVFCLOT||MSD^Merck \T Co, Inc.^MVX|||A
 RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
 OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|62^HPV, Quadrivalent^CVX^90649^HPV, Quadrivalent^CPT|||||F
 OBX|2|NM|30973-2^Dose number in series^LN|1|1|||||F
 ORC|RE||0
 RXA|0|1|20060101|20060101|998^No Vaccine Administered^CVX|999|||||||||A
 OBX|1|CE|30979-9^Vaccines Due Next^LN|0|45^HepB^CVX^90731^HepB^CPT|||||F
 OBX|2|DT_T|30980-7^Date Vaccine Due^LN|0|20150422|||||F
 OBX|3|NM|30973-2^Vaccine due next dose number^LN|0|2|||||F
 OBX|4|DT_T|30981-5^Earliest date to give^LN|0|20150422|||||F
 OBX|5|DT_T|59778-1^Vaccine Overdue Date^LN|0|20150525|||||F
 OBX|6|CE|59779-9^Immunization Schedule used^LN|0|VXC16^ACIP^CDCPHINVS|||||F
 OBX|7|CE|30979-9^Vaccines Due Next^LN|1|137^HPV^CVX|||||F
 OBX|8|DT_T|30980-7^Date Vaccine Due^LN|1|20160226|||||F
 OBX|9|NM|30973-2^Vaccine due next dose number^LN|1|2|||||F
 OBX|10|DT_T|30981-5^Earliest date to give^LN|1|20160226|||||F
 OBX|11|DT_T|59777-3^Vaccine latest Date^LN|1|20351231|||||F
 OBX|12|DT_T|59778-1^Vaccine Overdue Date^LN|1|20160926|||||F
 OBX|13|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F
 OBX|14|CE|30979-9^Vaccines Due Next^LN|2|88^Influenza^CVX^90724^Influenza^CPT|||||F
 OBX|15|DT_T|30980-7^Date Vaccine Due^LN|2|20060701|||||F
 OBX|16|NM|30973-2^Vaccine due next dose number^LN|2|1|||||F
 OBX|17|DT_T|30981-5^Earliest date to give^LN|2|20060701|||||F



OBX|18|DT_T|59778-1^Vaccine Overdue Date^LN|2|20070101|||||F
OBX|19|CE|59779-9^Immunization Schedule used^LN|2|VXC16^ACIP^CDCPHINVS|||||F
OBX|20|CE|30979-9^Vaccines Due Next^LN|3|108^Meningo^CVX|||||F
OBX|21|DT_T|30980-7^Date Vaccine Due^LN|3|20170101|||||F
OBX|22|NM|30973-2^Vaccine due next dose number^LN|3|1|||||F
OBX|23|DT_T|30981-5^Earliest date to give^LN|3|20170101|||||F
OBX|24|DT_T|59777-3^Vaccine latest Date^LN|3|20271231|||||F
OBX|25|DT_T|59778-1^Vaccine Overdue Date^LN|3|20190101|||||F
OBX|26|CE|59779-9^Immunization Schedule used^LN|3|VXC16^ACIP^CDCPHINVS|||||F
OBX|27|CE|30979-9^Vaccines Due Next^LN|4|03^MMR^CVX^90707^MMR^CPT|||||F
OBX|28|DT_T|30980-7^Date Vaccine Due^LN|4|20070101|||||F
OBX|29|NM|30973-2^Vaccine due next dose number^LN|4|1|||||F
OBX|30|DT_T|30981-5^Earliest date to give^LN|4|20070101|||||F
OBX|31|DT_T|59778-1^Vaccine Overdue Date^LN|4|20070501|||||F
OBX|32|CE|59779-9^Immunization Schedule used^LN|4|VXC16^ACIP^CDCPHINVS|||||F
OBX|33|CE|30979-9^Vaccines Due Next^LN|5|115^Pertussis^CVX^90715^Pertussis^CPT|||||F
OBX|34|DT_T|30980-7^Date Vaccine Due^LN|5|20170101|||||F
OBX|35|NM|30973-2^Vaccine due next dose number^LN|5|1|||||F
OBX|36|DT_T|30981-5^Earliest date to give^LN|5|20160101|||||F
OBX|37|DT_T|59778-1^Vaccine Overdue Date^LN|5|20190101|||||F
OBX|38|CE|59779-9^Immunization Schedule used^LN|5|VXC16^ACIP^CDCPHINVS|||||F
OBX|39|CE|30979-9^Vaccines Due Next^LN|6|89^Polio^CVX|||||F
OBX|40|DT_T|30980-7^Date Vaccine Due^LN|6|20060301|||||F
OBX|41|NM|30973-2^Vaccine due next dose number^LN|6|1|||||F
OBX|42|DT_T|30981-5^Earliest date to give^LN|6|20060212|||||F
OBX|43|DT_T|59777-3^Vaccine latest Date^LN|6|20231231|||||F
OBX|44|DT_T|59778-1^Vaccine Overdue Date^LN|6|20060401|||||F
OBX|45|CE|59779-9^Immunization Schedule used^LN|6|VXC16^ACIP^CDCPHINVS|||||F
OBX|46|CE|30979-9^Vaccines Due Next^LN|7|139^Td^CVX|||||F
OBX|47|DT_T|30980-7^Date Vaccine Due^LN|7|20130101|||||F
OBX|48|NM|30973-2^Vaccine due next dose number^LN|7|1|||||F
OBX|49|DT_T|30981-5^Earliest date to give^LN|7|20130101|||||F
OBX|50|DT_T|59778-1^Vaccine Overdue Date^LN|7|20130201|||||F
OBX|51|CE|59779-9^Immunization Schedule used^LN|7|VXC16^ACIP^CDCPHINVS|||||F
OBX|52|CE|30979-9^Vaccines Due Next^LN|8|21^Varicella^CVX^90716^Varicella^CPT|||||F
OBX|53|DT_T|30980-7^Date Vaccine Due^LN|8|20190101|||||F
OBX|54|NM|30973-2^Vaccine due next dose number^LN|8|1|||||F
OBX|55|DT_T|30981-5^Earliest date to give^LN|8|20190101|||||F
OBX|56|DT_T|59778-1^Vaccine Overdue Date^LN|8|20200101|||||F



```
OBX|57|CE|59779-9^Immunization Schedule used^LN|8|VXC16^ACIP^CDCPHINVS|||||F</return>
  </submitSingleMessageResponse>
</S:Body>
</S:Envelope>
```

Z22 Unsolicited Vaccination Record Update (VXU)

The Z22(VXU) is used for sending client data and immunizations.

IMMUNET will NOT accept an ADT message (unsolicited demographic update) for a new patient. ADT message is only used to update existing patient demographic information to patients existing in IMMUNET. Therefore, it is best to include the demographic information in a Z22(VXU) message whenever possible, as this message type accommodates BOTH immunization information and demographic update information. If submitting a new patient it must follow the Z22(VXU) message format for the new patient within the file. When a VXU^V04^VXU_V04 (Unsolicited Vaccination Record Update) message type is sent with no ORC associated to a RXA segment, then the client will be rejected. Similarly, an ORC segment with no associated RXA segment will result in message rejection.

- MSH Message Header
- PID Patient Identification
- [PD1] Patient Additional Demographic
- [NK1] Next of Kin / Associated Parties
- {ORC Common Order Segment
- RXA Pharmacy / Treatment Administration
- [RXR] Pharmacy / Treatment Route (Only one RXR per RXA segment)
- [OBX] Observation/Result*

Z22 Sample Call

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:urn="urn:cdc:iisb:2011">
  <soap:Header/>
  <soap:Body>
    <urn:submitSingleMessage>
      <!--Optional:-->
      <urn:username>chrischris</urn:username>
      <!--Optional:-->
      <urn:password>chris1chris</urn:password>
      <!--Optional:-->
      <urn:facilityID>161640023</urn:facilityID>
    <urn:hl7Message>
      MSH|^~\&|IMMUNET2.0.10|IMMUNET||IRPH|20170616164946-
      400||VXU^V04^VXU_V04|Message01|P|2.5.1|||ER|AL||||Z22^CDCPHINVS
      PID||1^^MDA^PI^|LastTestName^FirstTestName^ ^^L^Mia^Moma^^^M^|20080109|F|||11c Street^Box
      11^MDCity^MD^54321^^^N
      PD1|||||A|||
```



```

NK1|1|LastTestName^FirstTestName^i^^L^|sel|11c Street^City^MD^54321^^^|
ORC|RE|ORC2|9874623|||ORC1010101010^OrderEntered^OEBBy^OEPerson^^^MDA||ORC12121212^Physician
Entered^PEBy^PEPerson^
^^MDA|||Dr. Doc's Clinic|||
RXA|0|1|19900707|19900707|J0696^CVX^^|1.0|mL||00^New
Admin^NIP001|RXA101010^FamName^GivenName^FG^^^MDA^L|^Joes
Clinic|||Lot-123ABC|20171010|AVB||CP|A|
</urn:hl7Message>
</urn:submitSingleMessage>
</soap:Body>
</soap:Envelope>

```

Z23 Sample Response

The Z23(ACK) is used to acknowledge to the sender that a message has been received.

- MSH Message Header
- MSA Message Acknowledgment
- `[[ERR]] Error<S:Envelope xmlns:S="http://www.w3.org/2003/05/soap-envelope">`

```

<S:Body>
<submitSingleMessageResponse xmlns="urn:cdc:iisb:2011">
<return>MSH|^~\&|IMMUNET2.0.10|IMMUNET||CTO|20140626143054-
0400||ACK|103390|P|2.5.1\NE\NE\\\Z23^CDCPHINVS
<If the sent message contained error(s) the will be a MSA and ERR segment for each error>
MSA|AE|103390
ERR||RXA^1^5^1^1|103^Table value not found^HL70357|E|5^Table value not found^HL70533||Error Code - 021:
Record
Rejected. J0696 is an invalid CVX code
<end error message example>
</return>
</submitSingleMessageResponse>
</S:Body>
</S:Envelope>

```



Error Handling

These errors could result in rejection of the message or parts of the message. Supporting HL7 Version 2.5.1 Message Type: ACK –Profile Z23 and RSP – Profile Z33.

| Error (ERR) | | | |
|-------------|-------------------------|--------|-----------------------------|
| ERR-1 | Error Code and Location | ERR-6 | Application Error Parameter |
| ERR-2 | Error Location | ERR-7 | Diagnostic Information |
| ERR-3 | HL7 Error Code | ERR-8 | User Message |
| ERR-4 | Severity | ERR-9 | Inform Person Indicator |
| ERR-5 | Application Error Code | ERR-10 | Override Type |

Error Examples

Missing required parameter QPD-3

```
ERR||QPD^1^3^0|^HL70357||||Error Code - 016: MESSAGE REJECTED - REQUIRED FIELD QPD-3 MISSING.|
```

Missing first name

```
ERR||QPD^1^4^1^2|101^Required field missing^HL70357|E|4^Invalid value^HL70533||||Error Code - 073: First name required for Who Subject Filter|
```

Opt-Out Patient / Patient Not Found

```
<?xml version="1.0" encoding="utf-8"?>
<Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
  <Body>
    <submitSingleMessageResponse xmlns="urn:cdc:iisb:2011">
      <return>MSH|^~\&|IMMUNET2.17.0|IMMUNET||crisp|20180514204225-0400||RSP^K11^RSP_K11|20180417135014019002|P|2.5.1|||NE|NE||||Z33^CDCPHINVS||MSA|AA|20180417135014019002||||
      QAK|XDOC-1742593|NF|Z44^Request Evaluated Immunization History and Forecast^CDCPHINVS
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