



Tennessee Immunization Program
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2.5.1 QBP and RSP Technical Specifications for the Tennessee Department of Health (TDH) Immunization Information System (TennIIS)

Contents

Introduction	4
TennIIS-Supported QBP Types	4
TennIIS-Supported RSP Types	4
Important Notes.....	4
Data Types	4
QBP Message Prior to VXU Message.....	4
QBP Field Definitions.....	5
Simple Object Access Protocol (SOAP) Web Services Definition Language (WSDL) Transport	5
RSP Messages from TennIIS	5
Optional Fields	5
Return Vaccination Forecasts.....	5
TennIIS Settings for an Exact Patient Match	5
o Return Private Demographic Fields	5
o Return Master Patient Name, Gender, and Date of Birth.....	5
o Return Master Patient Address	5
o Return Vaccine Administration Notes	6
o Return Vaccination Deletes.....	6
o Return Contraindications	6
o Return Multiple Birth Count.....	6
o Not Return Tuberculosis Skin Test Indurations	6
QBP Message Segment Usage in Proper Sequence.....	6
Required and Optional QBP Message Segments in Proper Sequence	7
Message Header (MSH) Segment – Required	7
Query Parameter Definition (QPD) Segment – Required	9
Response Control Parameter (RCP) Segment – Required	11
RSP Message Segment Usage in Proper Sequence	12
Returned RSP Message Segments in Proper Sequence.....	14
Message Header (MSH) Segment	14
Message Acknowledgement (MSA) Segment	15
Error (ERR) Segment	16
Query Acknowledgement (QAK) Segment.....	17

Query Parameter Definition (QPD) Segment	18
Patient Identification (PID) Segment	19
Patient Demographic (PD1) Segment.....	19
Next of Kin (NK1) Segment	19
Common Order (ORC) Segment.....	19
Pharmacy/Treatment Administration (RXA) Segment	20
Pharmacy/Treatment Route (RXR) Segment	20
Observation (OBX) Segment.....	21
Query for Vaccination Record	24
Finding an Exact Patient Match.....	24
Tier 1: Patient Unique Identifier in QPD-3.....	24
Tier 2: Patient Demographics.....	24
Tier 3: Re-querying if Multiple Patients Are Returned	25
Response to Query	26
Appendix A: Examples of QBP Messages.....	27
Appendix B: Examples of RSP/ACK Messages	28
Example of a Z31 Response (Multiple Patient Matches).....	28
Example of a Z32 Response (Return Vaccination History)	28
Example of a Z33 Response (Error with Query).....	29
Example of a Z33 Response (No Match/Too Many)	30
Example of a Z42 Response (Return Vaccination History and Forecast).....	30
Example of an ACK Message Response (Application Reject)	33
Appendix C: Technical Specifications Change History Details	35

Introduction

Required fields and select components outlined in the Centers for Disease Control and Prevention (CDC) Health Level Seven (HL7) Version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5, 10/01/2014 ([CDC IG](#)) and the HL7 Version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5 - Addendum, 07/2015 ([Addendum](#)) as well as constraints placed on the CDC IG and Addendum are listed in this document by message segment for query (QBP) messages.

- If a field is not listed within this document, then it is not a required field.
- Fields that have specific literal value requirements are documented in the Value column where applicable.
- If a field is required but may be empty and the Trading Partner (TP) is submitting an empty field, the empty field should be indicated by two vertical bars with nothing in between unless that field is at the end of the segment.

For standards and specifications not defined in this document, refer to the [CDC IG](#) and [Addendum](#).

An ideal transaction between a provider/EHR vendor and TennIIS would consist of 4 messages, each of which are outlined in detail throughout this document.

1. Query (QBP) from the TP to TennIIS
2. Response (RSP) from TennIIS to the TP
3. Update (VXU) from the TP to TennIIS
4. Acknowledgment (ACK) from TennIIS to the TP

TennIIS-Supported QBP Types:

Message Type	Associated Profile	Purpose
QBP	Z34^CDCPHINVS	Request Complete Immunization History
	Z44^CDCPHINVS	Request Evaluated History and Forecast

TennIIS-Supported RSP Types:

Message Type	Associated Profile	Associated Query Types	Purpose
RSP	Z31^CDCPHINVS	Z34	Return Candidate Matches List
	Z32^CDCPHINVS	Z34	Return Complete Immunization History
	Z33^CDCPHINVS	Z34, Z44	Return Acknowledgement with No Person Records
	Z42^CDCPHINVS	Z44	Return Evaluated History and Forecast

Important Notes

Data Types: Refer to the CDC IG and Addendum for the data type specifications of each field.

QBP Message Prior to VXU Message: The TP should attempt to query TennIIS before submitting an update in a VXU message; the system registry ID is returned in the RSP message and can be used to

later update the patient. This will increase the likelihood of finding a patient match and decrease the need for manual deduplication.

QBP Field Definitions: The likelihood of finding a particular person or matched patient is improved when all known parameters are populated. The TP should strive to include values for each query parameter. For higher probability of finding a patient match, the TP could send an update (VXU) message prior the query (QBP) message thus associating the patient in TennIIS with the external TP patient id.

Simple Object Access Protocol (SOAP) Web Services Definition Language (WSDL) Transport:

TennIIS supports message transport via both secure file transport protocol (SFTP) and real-time SOAP WSDL. For querying TPs, the use of a real-time, synchronous WSDL transport is highly recommended. The WSDL implemented in Tennessee is a nationally-recommended WSDL for immunization messaging. For implementation resources, see the CDC IIS Technical Guidance [page](#) and for education resources, see the American Immunization Registry Association’s Technical Assistance [training videos](#).

RSP Messages from TennIIS: TennIIS will send RSP messages for individuals who have a record in TennIIS as specified in the CDC IG and Addendum as a result of a TP query. The RSP messages will contain a history of vaccination and forecast depending on the type of query submitted. For more detailed information on the types of RSP messages returned from TennIIS, see [Appendix B](#).

Optional Fields: Sending optional fields not specified within this document will not cause an error when submitted as part of a QBP message, but its value will be ignored and have no impact on how the query is processed. If the TP sends optional fields, they must be properly formatted and must not contain any errors. If an optional field is submitted with errors, it may cause the entire message to fail.

Return Vaccination Forecasts: If forecasting is desired, the TP can submit a Message Profile Identifier (MSH-21) and Message Query Code (QPD-1.1) of Z44. This will be recognized in TennIIS as a request for evaluated history and forecast, and will result in a Z33 or Z42 RSP message; see [Appendix B](#).

TennIIS Settings for an Exact Patient Match: When a query finds an exact patient match, TennIIS will return either a Z32 (complete immunization history) or Z42 (evaluated history and forecast) message containing:

- **Return Private Demographic Fields:** All normally private demographic fields from that patient’s master record.
- **Return Master Patient Name, Gender, and Date of Birth:** The patient’s most current name, gender, and date of birth from all organizations submitting data to TennIIS on behalf of the patient will be returned, not the patient’s most current name, gender, and date of birth according to the querying organization.
- **Return Master Patient Address:** The patient’s most current address from all organizations submitting data to TennIIS on behalf of the patient will be returned, not the patient’s most current address according to the querying organization.

- **Return Vaccine Administration Notes:** Vaccinations that are in TennIIS as administered will be returned as administered and vaccinations that are in TennIIS as historical will be returned as historical.
- **Return Vaccination Deletes:** Vaccinations that are deleted from TennIIS are not truly deleted; they will not be apparent on the patient master vaccination record but will be returned in Z42 RSP message in response to a Z44 query. They will be identified with a “D” in RXA-21. If the EHR vendor cannot consume deleted vaccinations as deleted, the TennIIS team can update a provider-specific setting to stop sending vaccination deletes.
- **Return Contraindications:** Contraindications documented in TennIIS (such as history of chickenpox disease) will be returned.
- **Return Multiple Birth Count:** The multiple birth indicator and birth order will be returned.
- **Not Return Tuberculosis Skin Test Indurations:** TennIIS does not accept or store information on tuberculosis (TB) skin tests, therefore TB indurations will not be returned.

QBP Message Segment Usage in Proper Sequence

Key: R = Required; O = Optional; C = Conditional

Segment	Usage	Expectation
Message Header (MSH)	R	Every message must begin with an MSH segment.
Query Parameter Definition (QPD)	R	Every QBP must have one QPD segment.
Response Control Parameter (RCP)	R	Every QBP must have one RCP segment.

Required and Optional QBP Message Segments in Proper Sequence

Message Header (MSH) Segment – Required

Field		Description/Comments	Value
MSH-1	Field Separator		
MSH-2	Encoding Characters		^~\&
MSH-3	Sending Application	Supplied by TP	
MSH-4	Sending Organization		
	MSH-4.1	Namespace ID	Supplied by TennIS
	MSH-4.2	Universal ID	Must uniquely identify the organization; NPI is preferred.
	MSH-4.3	Universal ID Type	If MSH-4.2 is populated, this value should be "NPI".
	Examples:		<ol style="list-style-type: none"> 1. <i>MSH-4.1, 4.2 and 4.3:</i> DRJOESMITHORG^1234567890^NPI 2. <i>MSH-4.2 and 4.3:</i> ^123456789^NPI 3. <i>MSH-4.1:</i> DRJOESMITHORG
MSH-5	Receiving Application		SIIS
MSH-6	Receiving Facility		TDH^2.16.840.1.11388 3.3.773^ISO
MSH-7	Date and Time of Message	<p>Must be to the second; if time zone is not included, it is presumed to be the time zone of the reporting health care facility.</p> <p>Format without time zone: YYYYMMDDHHMMSS</p> <p>Format with time zone: YYYYMMDDHHMMSS+/-ZZZZ</p>	
MSH-9	Message Type		QBP^Q11^QBP_Q11
MSH-10	Message Control ID	Must uniquely identify a message instance within the scope of sending facility (MSH-4), sending application (MSH-3), and YYYYMMDD (MSH-7).	
MSH-11	Processing ID	<p>Used to route messages to the proper environment which has security safeguards for protected health information.</p> <p>Acceptable values:</p> <ul style="list-style-type: none"> • T for Training (used when testing) • P for Production 	
MSH-12	Version ID		2.5.1
MSH-15	Accept Acknowledgement Type		NE

Field		Description/Comments	Value
MSH-16	Application Acknowledgement Type		AL
MSH-21	Message Profiler Identifier	See Appendix A for example QBP messages for each query type.	Z34^CDCPHINVS Z44^CDCPHINVS
MSH-22	Sending Responsible Organization	Should be empty; if populated, should contain the same exact value as MSH-4.	
MSH-23	Receiving Responsible Organization	May be empty	

Example MSH segment from the organization Dr. Joe Smith Org sent to TennIS on January 13, 2019 at 9:50am:

For a Z34 Query:

```
MSH|^~\&|EHR|DRJOESMITHORG^1234567890^NPI|SIIS|TDH^2.16.840.1.113883.3.773^ISO|20190113095019||QBP^Q11^QBP_Q11|45646ug|P|2.5.1|||NE|AL|||Z34^CDCPHINVS||
```

For a Z44 Query:

```
MSH|^~\&|EHR|DRJOESMITHORG^1234567890^NPI|SIIS|TDH^2.16.840.1.113883.3.773^ISO|20190113095019||QBP^Q11^QBP_Q11|45646ug|P|2.5.1|||NE|AL|||Z44^CDCPHINVS||
```


Query Parameter Definition (QPD) Segment – Required

Field		Description/Comments	Value
QPD-1	Message Query Name		
	QPD-1.1	Message Query Code	Indicates the type of query the TP is submitting. Z34 Z44
	QPD-1.2	Message Query Description	Z34 = Request Immunization History Z44 = Request Evaluated History and Forecast
	QPD-1.3	Message Query Coding System	HL70471
QPD-2	Query Tag	Valued by the sending system to identify the QBP uniquely and may be used to match RSP messages to the original query. It will be echoed back as the first field in the query acknowledgement (QAK) segment of the RSP.	
QPD-3	Patient Identifier List	The first repetition must be the Medical Record Number or the System Registry ID (if stored from a previous QBP/VXU). Subsequent repetitions may include a Patient Internal Identifier, Birth File Number, Medicaid Number, and Social Security Number. <i>It is important to note that, if included in the query, TennIS will prioritize matching on the System Registry ID above all other patient identifying information.</i>	
	QPD-3.1	Internal Patient Identifier	
	QPD-3.5	Identifier Type	Acceptable values: <ul style="list-style-type: none"> • SR for System Registry ID • MR for Medical Record Number • PI for Patient Internal Identifier • BR for Birth File Number • MA for Medicaid Number • SS for Social Security Number
QPD-4	Patient Name	Legal name of the patient.	
	QPD-4.1	Last Name	
	QPD-4.2	First Name	
	QPD-4.3	Middle Name or Initial	May be empty; used to distinguish between patients with the same first and last name in TennIS.

Field		Description/Comments	Value
	QPD-4.7 Name Type Code		L
QPD-5	Mother's Maiden Name	May be empty; used to distinguish between patients with the same last name in TennIIS. Searches for guardian name using mother's maiden name.	
	QPD-5.1 Last Name		
	QPD-5.2 First Name		
	QPD-5.7 Name Type Code		M
QPD-6	Date of Birth	Format: YYYYMMDD	
QPD-7	Administrative Sex	May be empty; refer to Table 0001 in the CDC IG for a listing of acceptable values.	
QPD-8	Patient Address	May be empty; primary address of the patient.	
	QPD-8.1 Street Address 1		
	QPD-8.2 Street Address 2		
	QPD-8.3 City		
	QPD-8.4 State	Only states within the US are allowable values.	
	QPD-8.5 Postal Zip Code		
	QPD-8.6 Country Code		
	QPD-8.7 Address Type Code	Refer to Table 0190 in the CDC IG for a listing of acceptable values. If not valued, it will default to "L".	
QPD-9	Phone Number	May be empty.	
	QPD-9.2 Telecommunication Use Code	Refer to Table 0201 in the CDC IG for a listing of acceptable values.	
	QPD-9.3 Telecommunication Equipment Type	Refer to Table 0202 in the CDC IG for a listing of acceptable values.	
	QPD-9.6 Area Code		
	QPD-9.7 Phone Number		
QPD-10	Multiple Birth Indicator	Acceptable values are "Y" and "N". Do not populate this field universally with "N" as it will overwrite existing data in TennIIS. If status is undetermined, field should be empty.	

Field		Description/Comments	Value
QPD-11	Birth Order	Populated with a numeric value of 1 or more if PID-24 is valued "Y".	
<p><i>Example QPD segment requesting a complete immunization history for the patient William Wesley Wilson born on April 11, 2011 with a medical record number of 432155 and a mother whose maiden name is Wilma Wilde:</i></p> <p>For a Z34 Query: QPD Z34^Request Immunization History^HL70471 56844 432155^^^^MR Wilson^William^Wesley^^^^L Wilde^Wilma^^^^M 20110411 M 123 Any St^^Nashville^TN^37204^^L ^PRN^PH^^615^555555</p> <p>For a Z44 Query: QPD Z44^Request Evaluated History and Forecast^HL70471 56844 432155^^^^MR Wilson^William^Wesley^^^^L Wilde^Wilma^^^^M 20110411 M 123 Any St^^Nashville^TN^37204^^L ^PRN^PH^^615^555555</p>			

Response Control Parameter (RCP) Segment – Required

Field		Description/Comments	Value
RCP-1	Query Priority	May be empty or "I" to indicate immediate priority is expected.	
RCP-2	Quantity Limited Request	May be empty; this field may contain a maximum number of records (patient candidates) that may be returned in response to the query. Note: TennIIS considers too many candidates to be the value in RCP-2.1 or 20, whichever value is lowest.	
	RCP-2.1	Quantity Limited Number	Contains the numeric count of records that may be returned; default is 20.
	RCP-2.2	Quantity Limited Code	RD
<p><i>Example RCP segment to immediately return no more than 20 records:</i></p> <p>RCP 20^RD</p>			

RSP Message Segment Usage in Proper Sequence

Segment	Expectation
Message Header (MSH)	Every message must begin with an MSH segment.
Message Acknowledgement (MSA)	Every RSP message must have one MSA segment. The MSA segment includes information to identify context of the prior message.
Error (ERR)	The ERR segment is only included when no patients are found, too many patients are found, or there was an error processing the query; this segment in an RSP message reports information about errors in processing the message. The segment may repeat in an RSP message; each error will have its own ERR segment.
Query Acknowledgement (QAK)	The QAK segment contains information sent to accompany query responses.
Query Parameter Definition (QPD)	Reiterates the QPD segment created by the initiating system.
Patient Identification (PID)	Every RSP message that finds one or more potential patient matches will have one or more PID segments. <i>Note: for detailed information on how this segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the "Patient Identification (PID) Segment" section as the segment structure in a VXU is the same returned in an RSP.</i>
Patient Demographic (PD1)	For an RSP returning potential matches, the PID segment in a RSP message may have one PD1 segment. <i>Note: for detailed information on how this segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the "Patient Demographic (PD1) Segment" section as the segment structure in a VXU is the same returned in an RSP.</i>
Next of Kin (NK1)	For an RSP returning potential matches, the PID segment in a RSP message may have NK1 segments. <i>Note: for detailed information on how this segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the "Common Order (ORC) Segment" section as the segment structure in a VXU is the same returned in an RSP.</i>
Common Order (ORC)	For an RSP returning potential matches and vaccination history, required for each Pharmacy/Treatment Administration (RXA) Segment. Each RSP message may have more than one order group. <i>Note: for detailed information on how this segment is returned in the vaccination history, please refer to our 2.5.1 VXU and ACK Technical Specifications in the "Common Order (ORC) Segment" section as the segment structure in a VXU is the same returned in an RSP.</i>
Pharmacy/Treatment Administration (RXA)	For an RSP returning potential matches and vaccination history, each ORC segment in a RSP message must have one RXA segment; every RXA segment requires an ORC segment.

	<p><i>Note: for detailed information on how this segment is returned in the vaccination history, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Pharmacy/Treatment Administration (RXA) Segment” section as the segment structure in a VXU is the same returned in an RSP.</i></p>
Pharmacy/Treatment Route (RXR)	<p>For an RSP returning potential matches and vaccination history, every RXA segment in a RSP message may have one RXR segment.</p> <p><i>Note: for detailed information on how this segment is returned in the vaccination history, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Pharmacy/Treatment Route (RXR) Segment” section as the segment structure in a VXU is the same returned in an RSP.</i></p>
Observation/Result (OBX)	<p>For an RSP returning potential matches, vaccination history, or a vaccination history and forecast, OBX segments are returned.</p> <p>When returning a vaccination history, OBX segments included reflect those submitted by another organization (patient eligibility, vaccine purchased with, VIS presentation date, etc).</p> <p><i>Note: for detailed information on how this segment is returned in the vaccination history, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Observation (OBX) Segment” section as the segment structure in a VXU is the same returned in an RSP.</i></p> <p>When returning a vaccination history and forecast, OBX segments included are vaccine type, immunization schedule used, dose number in series, date vaccination due, earliest date to give, latest date next dose should be given, date dose is overdue, and status in immunization series.</p>

Returned RSP Message Segments in Proper Sequence

Message Header (MSH) Segment

Field	Description/Comments	Value
MSH-1	Field Separator	
MSH-2	Encoding Characters	^~\&
MSH-3	Sending Application	SIIS^^
MSH-4	Sending Organization	TDH^2.16.840.1.11388 3.3.773^ISO
MSH-5	Receiving Application	Echoes value sent in MSH-3 by the initiating system.
MSH-6	Receiving Facility	Echoes value sent in MSH-4 by the initiating system.
MSH-7	Date and Time of Message	Format with time zone: YYYYMMDDHHMMSS+/-ZZZZ
MSH-9	Message Type	RSP^K11^RSP_K11
MSH-10	Message Control ID	Uniquely identifies a message instance within the scope of sending facility (MSH-4), sending application (MSH-3), and YYYYMMDD (MSH-7).
MSH-11	Processing ID	P
MSH-12	Version ID	2.5.1
MSH-15	Accept Acknowledgement Type	NE
MSH-16	Application Acknowledgement Type	NE
MSH-21	Message Profiler Identifier	Z31^CDCPHINVS^^ Z32^CDCPHINVS^^ Z33^CDCPHINVS^^ Z42^CDCPHINVS^^

Example MSH segment sent from TennIS to the organization Dr. Joe Smith Org on January 13, 2019 at 9:50am:

```
MSH|^~\&| SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^| DRJOESMITHORG^1234567890^NPI
|20191205133136-
0600||RSP^K11^RSP_K11|7725872959.107756077|P|2.5.1|||NE|NE|||Z32^CDCPHINVS^^|
```

Message Acknowledgement (MSA) Segment

Field	Description/Comments	Value
MSA-1	Acknowledgement Code AA = Application Accept AE = Application Error AR = Application Reject	HL70008
MSA-2	Message Control ID Contains the message control ID of the message sent by the sending system for matching purposes; echoes the value in MSH-10 from the initiating system.	
<p><i>Example MSA segment sent from TennIS to the organization Dr. Joe Smith Org:</i></p> <p>MSA AA 165161651 MSA AE 212245544 MSA AR 886623246 </p>		

Error (ERR) Segment

- Only returned when no patient matches found, too many patients found, or error in processing message.

Field		Description/Comments	Value
ERR-2	Error Location	Identifies the location in the message where the error, warning, or information is applicable. Examples: <ul style="list-style-type: none"> • RXA^^10 • OBX 69764-9 • PID^^ 	
ERR-3	HL7 Error Code	Examples: <ul style="list-style-type: none"> • 0^Message accepted^HL70357 • 101^Required field missing^HL70357 • 999^Application Error^HL70357 	HL70357
ERR-4	Severity	E = Error W = Warning I = Informational	HL70516
ERR-8	User Message	Vendor-defined informative text about the error, warning, or information. Examples: <ul style="list-style-type: none"> • Patient 464651651 "JOHN SMITH" with 1 vaccination accepted into vaccination staging table • Vaccination person that vaccinated id is missing • VIS barcode is missing • Patient 18 or under with no guardian submitted 	

Example ERR segments sent from TennIS to the organization Dr. Joe Smith Org:

ERR| |0^Message accepted^HL70357| | | |Patient 464651651 "JOHN SMITH" with 1 vaccination accepted into vaccination staging table|

ERR| |RXA^^10|101^Required field missing^HL70357|W| | | |vaccination person that vaccinated id is missing|

ERR| |OBX 69764-9|101^Required field missing^HL70357|W| | | |vis barcode is missing|

ERR| |PID^^|999^Application Error^HL70357|W| | | |patient 18 or under with no guardian submitted|

Query Acknowledgement (QAK) Segment

Field	Description/Comments	Value
QAK-1	Query Tag Contains the query tag sent in QPD-2 by the initiating system and is used to match response messages to the originating query.	
QAK-2	Query Response Status Precise response status, especially important in the case where no data is found that matches query parameters for a query that did not error. Possible Values (Table 0208): <ul style="list-style-type: none"> • AR – Application Reject • NF – No Data Found, No Errors • OE – Application Error • OK – Data Found, No Errors 	HL70471
QAK-3	Message Query Name Contains the name of the query; should mirror the message query name sent in QPD-1 by the initiating system. Examples: <ul style="list-style-type: none"> • Z34^Request Immunization History^HL70471 • Z44^Request Evaluated History and Forecast^HL70471 	
<p><i>Example QAK segment sent from TennIS to the organization Dr. Joe Smith Org:</i></p> <p>QAK 31429087 OK Z34^Request Immunization History^HL70471 </p> <p>QAK 31429617 NF Z34^Request Immunization History^HL70471 </p> <p>QAK 116632 OK Z44^Request Evaluated History and Forecast^HL70471 </p>		

Query Parameter Definition (QPD) Segment

- Echoes the QPD segment submitted in the initial query by the initiating system.

Field		Description/Comments	Value
QPD-1	Message Query Name	Indicates the type of query the TP originally submitted. Z34 = Request Immunization History Z44 = Request Evaluated History and Forecast	HL70471
QPD-2	Query Tag	Valued by the initiating system to identify the QBP uniquely and used to match RSP messages to the original query.	
QPD-3	Patient Identifier List		
QPD-4	Patient Name		L
QPD-5	Mother's Maiden Name		M
QPD-6	Date of Birth	YYYYMMDD	
QPD-7	Administrative Sex		
QPD-8	Patient Address		
QPD-9	Phone Number	May be empty. If there are multiple phone numbers listed for the patient in TennIS, the primary number will be listed first. Each subsequent number will be separated by a "~".	
QPD-10	Multiple Birth Indicator		
QPD-11	Birth Order		

Example QPD segment sent from TennIS to the organization Dr. Joe Smith Org:

For a Z34 Query:

```
QPD|Z34^Request Immunization History^HL70471|
56844|432155^^^^MR|Wilson^William^Wesley^^^^L|Wilde^Wilma^^^^^M|20110411|M|123 Any
St^^Nashville^TN^37204^^L|^PRN^PH^^^615^5555555
```

For a Z44 Query:

```
QPD|Z44^Request Evaluated History and Forecast^HL70471|
56844|432155^^^^MR|Wilson^William^Wesley^^^^L|Wilde^Wilma^^^^^M|20110411|M|123 Any
St^^Nashville^TN^37204^^L|^PRN^PH^^^615^5555555
```

Patient Identification (PID) Segment

For detailed information on how the PID segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Patient Identification (PID) Segment” section as the segment structure in a VXU is the same returned in an RSP.

Patient Demographic (PD1) Segment

For detailed information on how the PD1 segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Patient Demographic (PD1) Segment” section as the segment structure in a VXU is the same returned in an RSP.

Next of Kin (NK1) Segment

For detailed information on how the NK1 segment is returned in a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Next of Kin (NK1) Segment” section as the segment structure in a VXU is the same returned in an RSP.

Common Order (ORC) Segment

For detailed information on how the ORC segment is returned in the vaccination history portion of a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Common Order (ORC) Segment” section as the segment structure in a VXU is the same returned in an RSP.

For detailed information on how the ORC segment is returned in the vaccination forecast portion of a response message please see the table below:

Field		Description/Comments	Value
ORC-1	Order Control		RE
ORC-3	Filler Order Number	In the vaccination forecast portion of an RSP message, the RXA segment is conveying information about an immunization that was not given, because of this the filler order number is 9999.	9999
<i>Example ORC segment in the vaccination forecast portion of an RSP sent from TennIIS to the organization Dr. Joe Smith Org:</i>			
ORC RE 9999			

Observation (OBX) Segment

For detailed information on how the OBX segment is returned in the vaccination history portion of a response message, please refer to our 2.5.1 VXU and ACK Technical Specifications in the “Observation (OBX) Segment” section as the segment structure in a VXU is the same returned in an RSP.

For detailed information on how the OBX segment is returned in the vaccination forecast portion of a response message please see the table below:

Field		Description/Comments	Value
OBX-1	Set ID		1
OBX-2	Value Type	<p>Examples include:</p> <ul style="list-style-type: none"> • CE (Coded Entry) • NM (Numeric) • TS (Time Stamp; Date/Time) 	
OBX-3	Observation Identifier	<p>This field indicates what the observation refers to (i.e. the question).</p> <p>In a vaccination forecast, 8 OBX segments are returned for each forecasted dose. This field encompasses vaccine type, immunization schedule used, dose number in series, date vaccination due, earliest date to give, latest date next dose should be given, date dose is overdue, and status in immunization series.</p> <p>Examples:</p> <ul style="list-style-type: none"> • 30956-7^vaccine type^LN • 59779-9^Immunization Schedule used^LN • 30973-2^Dose number in series^LN • 30980-7^Date vaccination due^LN • 30981-5^Earliest date to give^LN • 59777-3^Latest date next dose should be given^LN • 59778-1^Date dose is overdue^LN • 59783-1^Status in immunization series^LN 	
OBX-4	Observation Sub-ID		1
OBX-5	Observation Value	This field indicates what the observation is (i.e. the answer to the question in OBX-3).	

Field	Description/Comments	Value
	<p>In a vaccination forecast, 8 OBX segments are returned for each forecasted dose. This field encompasses vaccine type, immunization schedule used, dose number in series, date vaccination due, earliest date to give, latest date next dose should be given, date dose is overdue, and status in immunization series.</p> <p>Examples:</p> <ul style="list-style-type: none"> • 137^HPV^CVX • VXC16^ACIP^CDCPHINVS • 20210316 • O^Optional^STC0002 	
OBX-11	Observation Result Status	F
<p><i>Examples of each of the 8 OBX segments returned for a forecasted vaccination:</i></p> <pre> OBX 1 CE 30956-7^vaccine type^LN 1 137^HPV^CVX F OBX 1 CE 59779-9^Immunization Schedule used^LN 1 VXC16^ACIP^CDCPHINVS F OBX 1 NM 30973-2^Dose number in series^LN 1 1 F OBX 1 TS 30980-7^Date vaccination due^LN 1 20210316 F OBX 1 TS 30981-5^Earliest date to give^LN 1 20190316 F OBX 1 TS 59777-3^Latest date next dose should be given^LN 1 21100316 F OBX 1 TS 59778-1^Date dose is overdue^LN 1 20230412 F OBX 1 CE 59783-1^Status in immunization series^LN 1 O^Optional^STC0002 F OBX 1 CE 30956-7^vaccine type^LN 1 147^MENING^CVX F OBX 1 CE 59779-9^Immunization Schedule used^LN 1 VXC16^ACIP^CDCPHINVS F OBX 1 NM 30973-2^Dose number in series^LN 1 1 F OBX 1 TS 30980-7^Date vaccination due^LN 1 20210316 F OBX 1 TS 30981-5^Earliest date to give^LN 1 20210316 F OBX 1 TS 59777-3^Latest date next dose should be given^LN 1 20660316 F OBX 1 TS 59778-1^Date dose is overdue^LN 1 20230412 F OBX 1 CE 59783-1^Status in immunization series^LN 1 U^Up to Date^STC0002 F </pre>		

Query for Vaccination Record

TennIIS should be queried using demographic information and/or other identifiers in order to:

1. Request and receive a patient's complete immunization history by using a Z34 query type.
2. Request and receive an evaluated immunization history and forecast of next vaccine doses due by using a Z44 query type.

If no patient matches are found in TennIIS or there are errors, no immunization history and forecast will be returned.

Finding an Exact Patient Match

TennIIS uses a three tier approach to gauge the usefulness of a value in finding and identifying an exact patient match. To increase the probability of returning an exact match, your query must contain one of the following two tiers of patient-specific data elements:

Tier 1: Patient Unique Identifier in QPD-3

TennIIS always first attempts to identify a patient using values sent in QPD-3. The values submitted in this field can be used to uniquely identify a patient independently of other submitted values. It is recommended to use these values to identify a patient if the values are available.

Tier 1 Values	
Value in QPD-3.1	Value in QPD-3.5
Patient's System Registry ID	SR
Patient's Medical Record Number	MR
Patient's Birth File Number	BA
Patient's Medicaid Number	MA
Patient's Social Security Number	SS

Tier 2: Patient Demographics

If Tier 1 values are insufficient to identify an exact match, TennIIS will use Tier 2 values to try to identify an exact match.

Tier 2 Values		
Data Element	Location in QBP Message	Comments
Patient Last Name	QPD-4.1	
Patient First Name	QPD-4.2	
Mother's Maiden Last Name	QPD-5.1	Not required; searches for guardian last name using mother's maiden last name.
Mother's Maiden First Name	QPD-5.2	Not required; searches for guardian first name using mother's maiden first name.
Date of Birth	QPD-6	Cannot be younger than tomorrow's date. Format: YYYYMMDD

Tier 3: Re-querying if Multiple Patients Are Returned

Should an exact match be made with Tier 2 values, Tier 3 values will not be considered. If Tier 2 values result in multiple patients being returned, the following Tier 3 values should be used to re-query and help filter patients in an attempt to return an exact match. These Tier 3 values should be submitted in addition to the values in Tier 1 and/or Tier 2.

Tier 3 Values		
Data Element	Location in QBP Message	Comments
Patient Middle Name or Initial	QPD-4.3	These values are submitted in addition to the values in Tier 1 and/or Tier 2.
Administrative Sex	QPD-7	
Patient Street Address 1	QPD-8.1	
Patient City	QPD-8.3	
Patient State	QPD-8.4	
Patient Postal Zip Code	QPD-8.5	
Phone Number	QPD-9	
Birth Order	QPD-11	

See [Appendix A](#) for QBP examples.

Response to Query

Query Outcome	Response Profile	Response Message
Multiple candidate patients found	Z31	At least one lower confidence match is found. The number of candidates returned will be less than or equal to the maximum number allowed per RCP-2.1 or 20, whichever value is lowest. One PID segment with associated PD1 and NK1 segments for each potential match is returned. <u>Note:</u> if a Z31 response profile is returned with a single candidate, TennIIS converts it into a Z32 response profile.
Exact patient match found and immunization history returned	Z32	Exactly one high confidence match is found and the patient's complete immunization history is returned.
No match found	Z33	Message was successfully processed, but no patients matched the criteria submitted in the query and therefore no demographic or immunization history is returned; QAK-2 is valued NF to indicate no data found.
Too many matches found	Z33	Message was successfully processed but the number of candidates identified exceeds 20 and therefore no demographic or immunization history is returned; QAK-2 is valued NF to indicate no data found.
Message contains errors	Z33	An error occurred when processing the query and therefore no demographic or immunization history is returned; QAK-2 is valued NF to indicate no data found.
Exact patient match found and evaluated immunization history and forecast returned	Z42	Exactly one high confidence match is found and the patient's complete immunization history and forecast is returned.
Application Reject	ACK	TennIIS was unable to process the query. The message was rejected and the ACK message describes the issues with the submitted query is returned; MSA-1

See [Appendix B](#) for RSP/ACK examples.

Appendix A: Examples of QBP Messages

Example of a Z34 Query: The organization Dr. Joe Smith Org queries the registry on January 13, 2012 at 9:50am requesting an immunization history for the patient William Wesley Wilson born on April 11, 2011 with a medical record number of 432155 and whose mother's name is Wilma Wilde.

```
MSH|^~\&|EHR|DRJOESMITHORG^1234567890^NPI|SIIS|TDH^2.16.840.1.113883.3.773^ISO|20120113094519||QBP^Q11^QBP_Q11|45646ug|P|2.5.1|||NE|AL|||Z34^CDCPHINVS||  
  
QPD|Z34^Request Evaluated History^HL70471  
|56844|432155^^^^MR|Wilson^William^Wesley^^^^L|Wilde^Wilma^^^^M  
|20110411|M|123 Any St^^Nashville^TN^37204^^L|^PRN^PH^^615^555555  
  
RCP||I|20^RD
```

Example of a Z44 Query: The organization Dr. Joe Smith Org queries the registry on January 13, 2012 at 9:50am requesting an evaluated immunization history and forecast for the patient William Wesley Wilson born on April 11, 2011 with a medical record number of 432155 and whose mother's name is Wilma Wilde.

```
MSH|^~\&|EHR|DRJOESMITHORG^1234567890^NPI|SIIS|TDH^2.16.840.1.113883.3.773^ISO|20120113094519||QBP^Q11^QBP_Q11|45646ug|P|2.5.1|||NE|AL|||Z44^CDCPHINVS||  
  
QPD|Z44^Request Evaluated History and Forecast^HL70471  
|56844|432155^^^^MR|Wilson^William^Wesley^^^^L|Wilde^Wilma^^^^M  
|20110411|M|123 Any St^^Nashville^TN^37204^^L|^PRN^PH^^615^555555  
  
RCP||I|20^RD
```

Appendix B: Examples of RSP/ACK Messages

Example of a Z31 Response (Multiple Patient Matches):

The example Z34 query message was edited to only include the patient's first name (QPD-4.2), last name (QPD-4.1), and date of birth (QPD-6). There are two patients with the same first name, last name, and date of birth. As a result, a query outcome of multiple patients was returned (see below).

```
MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DR|JOESMITHORG^1234567890^NPI|20190502103642||RSP^K11^RSP_K11|1376730471.100000547|P|2.5.1|||||||Z31^CDCPHINVS^^|MSA|AA|45646ug|QAK|56844|OK|Z34^Request Immunization History^HL70471|QPD|Z34^Request Immunization History^HL70471|56844||Wilson^William||20110411|M|L|PID|1||8679790^^^^SR||WILSON^WILLIAM^^^^L|BURK|20110411|M||2054-5^Black or African-American^CDCPHINVS|710 JAMES ROBERTSON^^NASHVILLE^TENNESSEE^37208^United States^M^^DAVIDSON~^^^US^BDL|||||||2135-2^Hispanic or Latino^HL70189||N|1||||N|PD1|||^^^^^SR|^^^^^^^^^^^SR|||||||A^Active^HL70441|NK1|1|^SAVANNAH|GRD^Guardian^HL70063|^'^^'|PID|2||8679684^^^^SR||WILSON^WILLIAM^^^^L|WILDE|20110411|M||2106-3^White^CDCPHINVS|123 ANY STREET^^NASHVILLE^TENNESSEE^37204^United States^M^^DAVIDSON~^^^US^BDL|||||||2186-5^not Hispanic or Latino^HL70189||N|1||||N|PD1|||^^^^^SR|^^^^^^^^^^^SR|||||||A^Active^HL70441|NK1|1|WILDE^WILMA|GRD^Guardian^HL70063|^'^^'|
```

Example of a Z32 Response (Return Vaccination History):

The example Z34 query was submitted. Exactly one high confidence patient match was found; patient demographics and vaccination history (includes contraindications and deleted vaccinations) were returned.

```
MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DR|JOESMITHORG^1234567890^NPI|20190502102628||RSP^K11^RSP_K11|7985696679.100000490|P|2.5.1|||||||Z32^CDCPHINVS^^|MSA|AA|45646ug|QAK|56844|OK|Z34^Request Immunization History^HL70471|QPD|Z34^Request Immunization History^HL70471|56844|432155^^^^MR|Wilson^William^Wesley|Wilde^Wilma^^^^M|20110411|M|123 Any St^^Nashville^TN^37204^^L|^PRN^PH^^^615^555555|PID|1||8679684^^^^SR||WILSON^WILLIAM^^^^L|WILDE|20110411|M||2106-3^White^CDCPHINVS|123 ANY STREET^^NASHVILLE^TENNESSEE^37204^United States^M^^DAVIDSON~^^^US^BDL|||||||2186-5^not Hispanic or Latino^HL70189||N|1||||N|PD1|||^^^^^SR|^^^^^^^^^^^SR|||||||A^Active^HL70441|NK1|1|WILDE^WILMA|GRD^Guardian^HL70063|^'^^'|PV1||R|ORC|RE||8679684.20.20120416|RXA|0|999|20120416|20120416|20^DTaP^CVX^90700^DTaP, unspecified formulation^CPT|999|||01^Historical information - source unspecified^NIP001||IRMS-1356683337|||||||A|20190502102628|
```

```

OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416|||CVX40^per imm^CDCPHINVS|
ORC|RE||8679684.34.20120416|
RXA|0|999|20120416|20120416|83^Hep A, ped/adol, 2 dose^CVX^90633^Hep A, ped/adol, 2
dose^CPT|999|||01^Historical information - source unspecified^NIP001||IRMS-
1356683337|||||||A|20190502102628|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416|||CVX40^per imm^CDCPHINVS|
ORC|RE||8679684.100.20120416|
RXA|0|999|20120416|20120416|08^Hep B, adolescent or pediatric^CVX^90744^Hep B, adolescent
or pediatric^CPT|999|||01^Historical information - source unspecified^NIP001||IRMS-
1356683337|||||||A|20190502102628|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416|||CVX40^per imm^CDCPHINVS|
ORC|RE||8679684.3.20120416|
RXA|0|999|20120416|20120416|03^MMR^CVX^90707^MMR^CPT|999|||01^Historical information
- source unspecified^NIP001||IRMS-1356683337|||||||A|20190502102628|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416|||CVX40^per imm^CDCPHINVS|
ORC|RE||8679684.21.20120416|
RXA|0|999|20120416|20120416|21^varicella^CVX^90716^varicella^CPT|999|||01^Historical
information - source unspecified^NIP001||IRMS-1356683337|||||||A|20190502102628|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416|||CVX40^per imm^CDCPHINVS|

```

Example of a Z33 Response (Error with Query):

The example Z44 query message was edited to only include the patient's first name (QPD-4.2), last name (QPD-4.1), and a future date of birth (QPD-6). As a result, a query outcome of no match found was returned (see below). No demographic information or immunization history was returned. QAK-2 is valued NF to indicate no data found.

```

MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DRJOESMITHORG^1234567890^NPI|20
190502102755||RSP^K11^RSP_K11|9530972122.100000508|P|2.5.1|||||||Z33^CDCPHINVS^^|
MSA|AA|45646ug|
ERR|||0|||No patients found for this query|
QAK|56844|NF|Z34^Request Immunization History^HL70471|
QPD|Z34^Request Immunization
History^HL70471|56844||Wilson^William^Wesley||20200411|M|L|

```

Example of a Z33 Response (No Match/Too Many):

The example Z44 query message was submitted prior to the queried patient being added to TennHS. As a result, a query outcome of no match found was returned (see below). No demographic information or immunization history was returned. QAK-2 is valued NF to indicate no data found.

```
MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DRJOESMITHORG^1234567890^NPI|20190
502101702||RSP^K11^RSP_K11|3647012753.100000463|P|2.5.1|||||||Z33^CDCPHINVS^^|
MSA|AA|45646ug|
ERR|||0|||No patients found for this query|
QAK|7407446410|NF|Z44^Request Evaluated History and Forecast^HL70471|
QPD|Z44^Request Evaluated History and Forecast^HL70471|7407446410|
432155^^^^MR|Wilson^William^Wesley|Wilde^Wilma^^^^M|20110411|M|123 Any
St^Nashville^TN^37204^^L|^PRN^PH^^615^5555555|
```

Example of a Z42 Response (Return Vaccination History and Forecast):

The example Z44 query message was submitted. Exactly one high confidence patient match was found; patient demographics, vaccination history (includes contraindications and deleted vaccinations), and forecast were returned.

Note: Patient immunization forecast is bolded.

```
MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DRJOESMITHORG^1234567890^NPI|20190
416160407||RSP^K11^RSP_K11|1074560131.100000239|P|2.5.1|||||||Z42^CDCPHINVS^^|
MSA|AA|45646ug|
QAK|56844|OK|Z44^Request Evaluated History and Forecast^HL70471|
QPD|Z44^Request Evaluated History and
Forecast^HL70471|56844|432155^^^^MR|Wilson^William^Wesley|Wilde^Wilma^^^^M|20110411|M
|123 Any St^Nashville^TN^37204^^L|^PRN^PH^^615^5555555|

PID|1||8679684^^^^SR||WILSON^WILLIAM^^^^L|WILDE|20110411|M||2106-
3^White^CDCPHINVS|123 ANY STREET^^NASHVILLE^
TENNESSEE^37204^United States^M^^DAVIDSON~~^^^^US^BDL|||||||2186-5^not Hispanic or
Latino^HL70189||N|1||||N|

ORC|RE||8679684.20.20120416|
RXA|0|999|20120416|20120416|20^DTaP^CVX^90700^DTaP, unspecified
formulation^CPT|999|||01^Historical information - source unspecified^NIP001||IRMS-
1356683337|||||||A|20190416160407|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|||||F|||20120416||CVX40^per imm^CDCPHINVS|

ORC|RE||8679684.34.20120416|
RXA|0|999|20120416|20120416|83^Hep A, ped/adol, 2 dose^CVX^90633^Hep A, ped/adol, 2
dose^CPT|999|||01^Historical information - source unspecified^NIP001||IRMS-
1356683337|||||||A|20190416160407|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|
```

OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|F|20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|F|20120416|CVX40^per imm^CDCPHINVS|

ORC|RE||8679684.100.20120416|
RXA|0|999|20120416|20120416|08^Hep B, adolescent or pediatric^CVX^90744^Hep B, adolescent or
pediatric^CPT|999||01^Historical information - source unspecified^NIP001||IRMS-
1356683337|A|20190416160407|

OBX|1|TS|29769-7^VIS Presentation Date^LN|1|F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|F|20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|F|20120416|CVX40^per imm^CDCPHINVS|

ORC|RE||8679684.3.20120416|
RXA|0|999|20120416|20120416|03^MMR^CVX^90707^MMR^CPT|999||01^Historical information -
source unspecified^NIP001||IRMS-1356683337|A|20190416160407|

OBX|1|TS|29769-7^VIS Presentation Date^LN|1|F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|F|20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|F|20120416|CVX40^per imm^CDCPHINVS|

ORC|RE||8679684.21.20120416|
RXA|0|999|20120416|20120416|21^varicella^CVX^90716^varicella^CPT|999||01^Historical
information - source unspecified^NIP001||IRMS-1356683337|A|20190416160407|

OBX|1|TS|29769-7^VIS Presentation Date^LN|1|F|
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|F|20120416|
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC
eligible^HL70064|F|20120416|CVX40^per imm^CDCPHINVS|

ORC|RE||9999|
**RXA|0|999|20190416160407|20190416160407|998^no vaccine
administered^CVX|0|NA|20190416160407|**
OBX|1|CE|30956-7^vaccine type^LN|1|89^POLIO^CVX|F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20110611|F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20110523|F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20110711|F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|F|

ORC|RE||9999|
**RXA|0|999|20190416160407|20190416160407|998^no vaccine
administered^CVX|0|NA|20190416160407|**
OBX|1|CE|30956-7^vaccine type^LN|1|88^FLU^CVX|F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20111011|F|

OBX|1|TS|30981-5^Earliest date to give^LN|1|20111011|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20111110|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|45^HepB^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|2|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20120514|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20120514|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20120808|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|85^HepA^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|2|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20121016|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20121016|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20131116|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|03^MMR^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|2|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20150411|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20120514|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20180508|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|21^VARICELLA^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|2|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20150411|||||F|

OBX|1|TS|30981-5^Earliest date to give^LN|1|20120709|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20180411|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine
administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|115^TDAP^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20180411|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20180411|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21310411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20180511|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine
administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|137^HPV^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20220411|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20200411|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21110411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20240508|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|U^Up to Date^STC0002|||||F|

ORC|RE||9999|

RXA|0|999|20190416160407|20190416160407|998^no vaccine
administered^CVX|0|||||||||||||NA||20190416160407|
OBX|1|CE|30956-7^vaccine type^LN|1|147^MENING^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20220411|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20220411|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|20670411|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20240508|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|U^Up to Date^STC0002|||||F|

Example of an ACK Message Response (Application Reject):

The example Z44 QBP message was edited to remove the RCP segment. As a result, the below ACK message was returned describing the issue with the submitted query.

```
MSH|^~\&|SIIS^^|TDH^2.16.840.1.113883.3.773^ISO|EHR^^|DRJOESMITHORG^1234567890^NPI|20190502101309||ACK^Q11^ACK|6140849055.100000453|P|2.5.1|||||||Z44^CDCPHINVS^^|MSA|AR|45646ug|ERR|^^^^|100^Segment sequence error^HL70357|E||||End of message reached too soon, expecting segments '*', or 'RCP' - Message Rejected|
```

Please refer to Chapter 7 of the CDC IG for more information on Query and Response profiles.

Appendix C: Technical Specifications Change History Details

Effective Date	Description of Revision
April 2024	Added a note to the QPD-3 segment specifications that TennIIS will prioritize matching based on a patient's System Registry ID above all other patient identification information if included in a system query message.
February 2022	The technical specifications document was updated to include new HL7 RSP language. <ul style="list-style-type: none"> • Language in ERR-8 surrounding VFC eligibility without a guardian submitted changed from "Patient is eligible for VFC but no guardian" to "Patient 18 or under with no guardian submitted" • Added additional QAK-2 values listed in PHC Hub Code Table (HL70208) • Clarified how multiple phone numbers are formatted when returned in QPD-9.
December 2019	The technical specifications document was updated to add more detail pertaining to response messages.
May/June 2019	The technical specifications document was updated to encompass upgrades and clarify common issues experienced during data exchange with TennIIS. <ul style="list-style-type: none"> ○ Added QBP and RSP types supported by TennIIS ○ Removed language about control line feed and SFTP as the majority of querying providers are submitting data real-time via the WSDL. ○ Added language about the WSDL transport. ○ Clarified language around RSP messages. ○ Clarified language around returning vaccination forecasts. ○ Updated language around returning vaccination deletes. ○ Added Z44 queries throughout the document.
May 2016	<p>Technical specifications have been separated from the Trading Partner Agreement (TPA).</p> <p>This technical specifications document thoroughly highlights required and optional fields expected from our Trading Partners. Although the Trading Partner is still expected to refer to the CDC IG for additional details, this technical specifications document is more robust than the previous document while still being more concise than the CDC IG.</p>