



# Best Practices Guide: Optimizing Your HL7 Message

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## Introduction

For an HL7 message to meet Vermont’s ‘gold standard’ message, it must contain certain information, outside of what is required in a successfully consumed message. This Best Practices Guide was developed as a tool to assist Provider Practices in sending the highest quality of data within the HL7 message that comes from a Providers Electronic Health Record (EHR) system and is stored in the IMR. As data is stored and viewable from all different practices throughout Vermont, it is imperative that data be as accurate as possible to ensure the best delivery of care.

The guide is broken out into best practices related to Patient Demographics and Immunization Information. Tables reflect how codes should be mapped and standardized within your own system.

This guide was developed in conjunction with the Vermont HL7 Implementation Guide and should be referred to in order to understand and meet all the required and expected fields within a successfully consumed HL7 message.

### Important:

If you enter a test record into your production EHR for any reason, it may be imported into the Immunization Registry. This is a serious problem. We work hard to keep our data clean and accurate, and free of duplicate records. Sending test records, or “fake” records into our system inflates the number of individuals and can lead to lower vaccine coverage rates for your practice.

1. Talk with your EHR vendor about the consequences of entering “test” data into a production EHR.
2. Unless your vendor has designed a way to flag “test” data and prevent it from being included in production reports and HL7 feeds, *test data should never be entered into a production EHR*. Simply naming the person “test” or an agreed upon pseudonym does not suffice.

3. If “test” data in a production EHR cannot be avoided, arrangements will need to be made in advance with VITL and VDH such that “test” data can be identified and captured before it is added to the Vermont Immunization Registry. Please contact the VDH support team at (888) 688-4667 or by email [imr@vermont.gov](mailto:imr@vermont.gov) and contact VITL via <http://myvitl.net>.

## Patient Demographics

The Health Information Exchange will be sending and receiving information from many different sources, including Vital Records (birth certificate data), hospitals, and provider practices. In order to make it easier to find a patient record, make sure you are entering the correct name into your EHR system. For example, you may know a patient by his nickname of TJ, but if he is in other systems under his birth name of Thomas James, it will be difficult to match up, hence causing a duplicate, incomplete record.

Below are some best practices when entering demographic information into your EHR to ensure that data is matched up correctly and is displayed accurately.

## Patient Naming Conventions Best Practices

- ✓ Always use the patient’s *legal* First and Last Name.
  - Examples: A legal name of Nicholas should not be shortened to Nick; a last name of Smith-Jones should not be shortened to Smith.
- ✓ The First Name field should always contain a valid first name.
  - Examples: Avoid using ‘Baby’ Smith, ‘BabyBoy’ Jones, ‘nbjane’ Doe
- ✓ Do not put comments within the First or Last Name field.
  - Examples: putting in ‘duplicate’, ‘transferred’, ‘see other record’.
- ✓ A Middle Initial should be captured in its own separate field and not collapsed into the First Name field of the patient
  - Example: JaneD Smith should be Jane D. Smith
- ✓ A Suffix should be captured in its own separate field and not be collapsed into either the First Name or Last Name field. The following lists valid Suffixes that will process within the message:
  - JR, SR, I, II, III, IV, V, VI, VII, VIII, IX, X

Why will entering this information accurately be helpful for you?

- *Minimize duplicates*
  - Reduce instances where the same patient appears multiple times, but under slightly different variations of a name, making it easier to identify which patient to view and less risk of choosing the wrong patient.
- *Create one comprehensive record*
  - Minimize the chance of records not matching up and creating multiple records with fragmented information, increasing time spent searching each individual record in order to give the correct immunizations.

## Address/Phone Number Information Best Practices

- ✓ The street address MUST be filled in and be in address field 1 or the message will get rejected.
- ✓ The city, state and zip code MUST be filled in or the message will get rejected. The zip must be a 5-digit code. If a 9-digit zip is provided the hyphen must be included. Use the USPS Look Up Tool for assistance: [https://tools.usps.com/go/ZipLookupAction\\_input](https://tools.usps.com/go/ZipLookupAction_input).
- ✓ The area code should be entered into each record and as a 3-digit code.

## Other Gold Standard Best Practices

Below reflects additional fields that are not required in the HL7 message, but are extremely helpful in patient matching and additional statistics that may be run.

### Entering Mother's Maiden Name

This field can be very helpful for patient matching. Names change as mothers marry and divorce, but including this field gives a helpful constant.

### Entering Race

This field can be helpful for statistics and is strongly recommended by CDC on a national level. The table below reflects the codes to be sent within the HL7 message.

Race Description	Race Code
White	2106-3
Black or African American	2054-5
American Indian or Alaska Native	1002-5
Asian	2028-9
Native Hawaiian or Other Pacific Islander	2076-8
Other	2131-1

### Entering Ethnicity

This field can be helpful for statistics and is strongly recommended by CDC on a national level. The table below reflects the codes to be sent within the HL7 message.

\*NOTE: Codes H, N, U are only accepted for backward compatibility.

Ethnicity Description	Ethnicity Code
Hispanic or Latino	2135-2
Not Hispanic or Latino	2186-5
Unknown	UNK

## Bi-Directional Best Practices

The Vermont Immunization Registry is currently implementing bi-directional flow, where providers will be able to receive immunization data from the Registry, in addition to sending. Below are some additional best practices specifically for bi-directional flow.

### Be Ready!

- To receive immunization histories from the IMR, you must be able to receive and display all immunization related CVX codes. See immunization code tables below, or visit: [cdc.gov/vaccines/programs/iis/code-sets.html](https://www.cdc.gov/vaccines/programs/iis/code-sets.html).
- Talk with your vendor to understand your EHR process for querying, viewing and retrieving data from the IMR. Establish a workflow for your office to help keep operations running efficiently.

### Be Aware!

- The IMR is linked with Vital Records; if a patient is born in Vermont, we will have the name on the birth certificate. We do update names after adoptions automatically and marriages as we are informed.
- When you query for a patient history, even if you send a first name, last name, and date of birth that is an exact match to a record in our system, it sometimes happens that there is also a near match.
  - Example:  
William Washington 7/28/1979  
Bill Washington 6/28/1979
  - These are fictional patients in the IMR test system. If you query for either one of them, we will return both – and your EHR will need to be ready to respond to the information we send back and indicate which is the correct patient they wish to view.

### Be Prepared!

- Immunizations have different formulations. Hepatitis B vaccine for instance has 13 different formulations including “unspecified,” “pediatric/adolescent,” and “adult” as well as all the combination vaccines that contain Hepatitis B antigen. This means that in some situations, you will need to review the incoming information carefully before importing it.
  - Example: Your patient received an Influenza High Dose Quadrivalent vaccine on 11/1/2022 at a pharmacy. That pharmacy reported that to the IMR. Someone at your office was notified about that shot too, but entered it into your EHR as “Influenza Unspecified.” Those can look like two different shots, but they are actually the same vaccination event.
- It’s always a good idea to avoid the use of unspecified codes. If you do have them in your system, be alert that you do not inadvertently add duplicate immunizations.
- Sometimes, it’s the Registry that has a code that is not specific. If that happens, feel free to let us know (and we will correct it), but unfortunately at this time it’s not possible to update that information in our system via HL7.

## Immunization Information

Accurate immunization coding and populating within an EHR system will create a successful 'gold standard' HL7 message. The immunization portion of the message is used to enable certain functionality and reporting within the IMR, such as the Vaccine Forecaster, Reminder/Recall and Vaccine Administered Reports.

Below are some best practices when entering immunization information into your EHR to ensure that data is displayed accurately, and the message is successfully consumed.

If you would like to download the tables in this document, please head to the [Documentation Excel File on our website](#).

## CVX Codes Best Practices

All successful HL7 messages must contain a valid CVX code. A CVX code is defined as a numeric string, which represents the type of product used in an immunization. Every immunization that uses a given type of product will have the same CVX, regardless of who received it. As such, it is not easy to determine which CVX code to choose when setting up an EHR or when entering an immunization. Hib vaccine, for instance, has 10 different CVX codes.

Below are tables that display the CVX code and current CPT to help with ensuring that the correct CVX code is sent. The titles have been color-coded to reflect the following:

- **Green:** active/current immunizations codes that should be sent in an HL7 message.
- **Orange:** advise caution when sending these inactive codes. These should not be used when sending current immunizations, only historical.
- **Red:** please do not send these codes.

## Immunizations Currently Distributed in VT

Below is a list of the vaccines currently distributed in Vermont through the Vaccines for Children (VFC) or Vaccines for Adults (VFA) programs. If you receive subsidized vaccine through these programs, these are the codes to choose.

Immunization Name	CVX Code	CPT Code	Brand Name
COVID-19, mRNA, LNP-S, PF, 25mcg/0.25 mL, Moderna (Spikevax, 6 mos-11 yrs)	311	91321	SPIKEVAX
COVID-19, mRNA, LNP-S, PF, 50 mcg/0.5 mL, Moderna (Spikevax, 12+ yrs)	312	91322	SPIKEVAX
COVID-19, mRNA, LNP-S, PF, tri-sucrose, 10 mcg/0.3 mL, Pfizer (Comirnaty, 5-11 yrs)	310	91319	Pfizer-BioNTech COVID-19 Vaccine (US Only)
COVID-19, mRNA, LNP-S, PF, tri-sucrose, 30 mcg/0.3 mL, Pfizer (Comirnaty, 12+ yrs)	309	91320	COMIRNATY

Immunization Name	CVX Code	CPT Code	Brand Name
COVID-19, mRNA, LNP-S, PF, tris-sucrose, 3 mcg/0.3 mL, Pfizer (Comirnaty, 6 mos-4 yrs)	308	91318	COMIRNATY
COVID-19, subunit, rS-nanoparticle, adjuvanted, PF, 5 mcg/0.5 mL, Novavax (12+ yrs)	313	91304	Novavax COVID-19 Vaccine, Adjuvanted (US Only)
DTaP	20	90700	INFARIX
DTaP, 5 pertussis antigens	106	90700	DAPTACEL
DTaP,IPV,Hib,HepB	146	90697	VAXELIS
DTaP-Hep B-IPV	110	90723	PEDIARIX
DTaP-Hib-IPV	120	90698	PENTACEL
DTaP-IPV	130	90696	KINRIX; Quadracel
Hep A, adult	52	90632	HAVRIX-ADULT; VAQTA-ADULT
Hep A, ped/adol, 2 dose	83	90633	HAVRIX-PEDS; VAQTA-PEDS
Hep A-Hep B	104	90636	TWINRIX
Hep B, adolescent or pediatric	08	90744	ENGERIX B-PEDS; RECOMBIVAX-PEDS
Hep B, adult	43	90746	ENGERIX-B-ADULT; RECOMBIVAX-ADULT
HepB-CpG	189	90739	HEPLISAV-B
Hib (PRP-OMP)	49	90647	PEDVAXHIB
Hib (PRP-T)	48	90648	ACTHIB; HIBERIX
HPV9	165	90651	Gardasil 9
Influenza, adjuvanted, trivalent, PF	168	90653	Fluad
Influenza, live, trivalent, intranasal, PF	111	90660	FLUMIST*
Influenza, MDCK, trivalent, PF	153	90661	Flucelvax*
Influenza, split virus, trivalent, PF	140	90656	FLUARIX; FLULAVAL; FLUZONE*
IPV	10	90713	IPOL
meningococcal B, OMV	163	90620	Bexsero
meningococcal B, recombinant	162	90621	Trumenba
meningococcal conjugate quadrivalent, MenACWY-TT (MCV4)	203	90619	MenQuadfi
Meningococcal MCV40	136	90734	MENVEO (ONE AND TWO VIAL)
Meningococcal oligosaccharide (MenACWY), (MenB), PF	328	90624	PENMENVY
Meningococcal polysaccharide (MenACWY-TT conjugate), (MenB), PF	316	90623	PENBRAYA
MMR	03	90707	M-M-R II; PRIOROX
MMRV	94	90710	PROQUAD
Pneumococcal conjugate PCV21, polysaccharide CRM197 conjugate, PF	327	90684	CAPVAXIVE
Pneumococcal conjugate PCV20, polysaccharide CRM197 conjugate, adjuvant, PF	216	90677	PREVNAR 20
pneumococcal polysaccharide PPV23	33	90732	PNEUMOVAX 23
rotavirus, monovalent	119	90681	ROTARIX
rotavirus, pentavalent	116	90680	ROTATEQ
RSV, mAb, clesrovimab-cfor, 0.7 mL, neonate and infant, PF	332	90382	ENFLONSIA*

Immunization Name	CVX Code	CPT Code	Brand Name
RSV, mAb, nirsevimab-alip, 0.5 mL, neonate to 24 months	306	90380	BEYFORTUS*
RSV, mAb, nirsevimab-alip, 1 mL, neonate to 24 months	307	90381	BEYFORTUS*
RSV, bivalent, protein subunit RSVpreF, diluent reconstituted, 0.5 mL, PF	305	90678	ABRYSSVO*
RSV, recombinant, protein subunit RSVpreF, adjuvant reconstituted, 0.5 mL, PF	303	90679	AREXVY*
RSV, mRNA, injectable, PF	326	90683	mRESVIA*
Tdap	115	90715	ADACEL; BOOSTRIX
Vaccinia, smallpox Mpox vaccine live, PF, SQ or ID injection	206	90611	JYNNEOS
varicella	21	90716	VARIVAX
zoster recombinant	187	90750	SHINGRIX

\* LIMITED NDCs PROVIDED BY VFA/VFC PROGRAM. See provided list here

[healthvermont.gov/sites/default/files/document/ID\\_IZ\\_INFOHCP\\_VCVPVAVP\\_VCVPandVAVPVaccineAvailability.pdf](https://healthvermont.gov/sites/default/files/document/ID_IZ_INFOHCP_VCVPVAVP_VCVPandVAVPVaccineAvailability.pdf)

## Additional Codes Currently Accepted

Below are additional codes that are currently accepted in Vermont. This table also includes some of the more rarely administered immunizations that are not part of the usual schedule but may have been given to a patient. Your EHR system should accommodate these codes as well.

Immunization Name	CVX Code	CPT Code(s)
Adenovirus types 4 and 7	143	90581
Anthrax, post-exposure prophylaxis	318	90581
Anthrax, pre-exposure prophylaxis, post-exposure prophylaxis	24	90581
anthrax immune globulin	181	90581
BCG	19	90585
Botulinum antitoxin	27	90287
Chikungunya live attenuated vaccine, 0.5 mL, PF	317	90589
Cholera, live attenuated	174	90625
CMVIG	29	90291
COVID-19, mRNA, LNP-S, PF, 10 mcg/0.2 mL, Moderna (mNEXSPIKE, 12+ yrs)	334	91323
Dengue fever tetravalent	56	
Diphtheria antitoxin	12	90296
Ebola Zaire vaccine, live, recombinant, 1mL dose	204	90758
Influenza, split virus, trivalent, preservative (AFLURIA; FLULAVAL; FLUVIRIN; FLUZONE)	141	90657; 90658
Influenza, split virus, trivalent, PF (FLUVIRIN; AFLURIA)	140	90656
Influenza, recombinant, trivalent, PF	155	90673
Influenza, MDCK, trivalent, preservative	320	90661
Influenza, live, trivalent, intranasal, self/caregiver	333	

Immunization Name	CVX Code	CPT Code(s)
admin, PF		
Influenza, high-dose, trivalent, PF	135	90662
HBIG	30	90371
Hep B, high-dosage, dialysis or IC	44	90740
HPV, quadrivalent	62	90649
IG	86	90281
IGIV	87	90283
Influenza A monovalent (H5N1), ADJUVANTED-2013	160	
Influenza, adjuvanted, quadrivalent, PF	205	90694
Influenza, high-dose, quadrivalent, PF	197	90662
Influenza, injectable, quadrivalent, preservative free, pediatric	161	90685
Influenza, live, quadrivalent, intranasal	149	90672
Influenza, MDCK, quadrivalent, PF	171	90694
Influenza, MDCK, quadrivalent, preservative	186	90756
Influenza, recombinant, quadrivalent, PF	185	90682
Influenza, split virus, quadrivalent, PF	150	90686
Influenza, split virus, quadrivalent, preservative	158	90687; 90688
Influenza-avian, H5N8, monovalent, PF	321	
Influenza-avian, H5N8, monovalent, preservative	322	
Japanese Encephalitis IM	134	90738
meningococcal MCV4P	114	90734
Pneumococcal conjugate PCV 13	133	90670
Pneumococcal conjugate PCV15, polysaccharide CRM197 conjugate, adjuvant, PF	215	90671
Rabies - IM Diploid cell culture	175	90675
Rabies - IM fibroblast culture	176	90675
Rho(D) -IG IM	157	
Rho(D)-IG	156	
RIG	34	90375
RSV-MAb	93	90378
Td (adult), 2 Lf tetanus toxoid, preservative free, adsorbed	09	90714
Td (adult), 5 Lf tetanus toxoid, preservative free, adsorbed	113	90714
Tick-borne encephalitis, inactivated, PF, 0.25mL	223	90626
Tick-borne encephalitis, inactivated, PF, 0.5mL	224	90627
TIG	13	90389
typhoid, oral	25	90690
typhoid, ViCPs	101	90691
Vaccinia (smallpox, mpox), live	75	90622
vaccinia immune globulin	79	90393
VZIG	36	90396
yellow fever live	37	90717

Immunization Name	CVX Code	CPT Code(s)
Yellow fever vaccine live - alt	183	90717

## Historical Codes

Below are inactive or non-US codes that should only be used when entering a past immunization. They should never be used when entering in an immunization being administered today.

CVX Short Description	CVX Code	CPT Code
adenovirus, type 4	54	90476
adenovirus, type 7	55	90477
adenovirus, unspecified formulation	82	
Anthrax vaccine, unspecified	319	
AS03 Adjuvant	801	
Chikungunya, VLP, recombinant, 0.8 mL, PF	329	
cholera, BivWC	173	
cholera, unspecified formulation	26	90725
cholera, WC-rBS	172	
COV-2 COVID-19 Inactivated Non-US Vaccine Product (Minhai Biotechnology Co, KCONVAC)	516	
COVID-19 Inactivated, Non-US Vaccine (VLA2001, Valneva)	518	
COVID-19 IV Non-US Vaccine (BIBP, Sinopharm)	510	
COVID-19 IV Non-US Vaccine (CoronaVac, Sinovac)	511	
COVID-19 IV Non-US Vaccine (COVAXIN)	502	
COVID-19 IV Non-US Vaccine (QAZCOVID-IN)	501	
COVID-19 LAV Non-US Vaccine (COVIVAC)	503	
COVID-19 mRNA, bivalent, original/Omicron BA.1, Non-US Vaccine (Spikevax Bivalent), Moderna	519	
COVID-19 mRNA, bivalent, original/Omicron BA.1, Non-US Vaccine Product, Pfizer-BioNTech	520	
COVID-19 Non-US Vaccine, UNSPECIFIED	500	
COVID-19 PS Non-US Vaccine (Anhui Zhifei Longcom Biopharm + Inst of Micro, Chinese Acad of Sciences)	507	
COVID-19 PS Non-US Vaccine (EpiVacCorona)	509	
COVID-19 PS Non-US Vaccine (Jiangsu Province Centers for Disease Control and Prevention)	508	
COVID-19 SP, protein-based, adjuvanted (VidPrevtyn Beta), Sanofi-GSK	521	
COVID-19 vaccine, vector-nr, rS-Ad26, PF, 0.5 mL	212	91303
COVID-19 vaccine, vector-nr, rS-ChAdOx1, PF, 0.5 mL	210	91302
COVID-19 VVnr Non-US Vaccine (CanSino Biological Inc./Beijing Institute of Biotechnology)	506	
COVID-19 VVnr Non-US Vaccine (Sputnik Light)	504	
COVID-19 VVnr Non-US Vaccine (Sputnik V)	505	
COVID-19, D614, recomb, preS dTM, AS03 adjuvant add, PF, 10mcg/0.5mL	226	
COVID-19, D614, recomb, preS dTM, AS03 adjuvant add, PF, 5mcg/0.5mL	225	
COVID-19, mRNA, LNP-S, bivalent, PF, 10 mcg/0.2 mL	230	91316
COVID-19, mRNA, LNP-S, bivalent, PF, 10 mcg/0.2 mL dose	301	91315

CVX Short Description	CVX Code	CPT Code
COVID-19, mRNA, LNP-S, bivalent, PF, 3 mcg/0.2 mL dose	302	91317
COVID-19, mRNA, LNP-S, bivalent, PF, 30 mcg/0.3 mL dose	300	91312
COVID-19, mRNA, LNP-S, bivalent, PF, 50 mcg/0.5 mL or 25mcg/0.25 mL dose	229	91314
COVID-19, mRNA, LNP-S, PF, 10 mcg/0.2 mL dose, tris-sucrose	218	91307
COVID-19, mRNA, LNP-S, PF, 100 mcg/0.5mL dose or 50 mcg/0.25mL dose	207	91306
COVID-19, mRNA, LNP-S, PF, 3 mcg/0.2 mL dose, tris-sucrose	219	91308
COVID-19, mRNA, LNP-S, PF, 30 mcg/0.3 mL dose	208	91300
COVID-19, mRNA, LNP-S, PF, 30 mcg/0.3 mL dose, tris-sucrose	217	91305
COVID-19, mRNA, LNP-S, PF, 50 mcg/0.5 mL dose	221	91309
COVID-19, mRNA, LNP-S, PF, pediatric 25 mcg/0.25 mL dose	228	91311
COVID-19, mRNA, LNP-S, PF, pediatric 50 mcg/0.5 mL dose	227	
COVID-19, subunit, rS-nanoparticle+Matrix-M1 Adjuvant, PF, 0.5 mL	211	91304
Dengue fever, unspecified	330	
DT (pediatric)	28	90702
DT, IPV adsorbed	195	
DTaP, unspecified formulation	107	
DTAP/IPV/HIB - non-US	170	
DTaP-Hib	50	90721
DTaP-IPV-HIB-HEP B, historical	132	
DTP	01	90701
DTP-hepB-Hib Pentavalent Non-US	198	
DTP-Hib	22	90720
DTP-Hib-Hep B	102	
Ebola, unspecified	214	
hantavirus	57	
Hep A, IG	154	
Hep A, live attenuated	169	
Hep A, ped/adol, 3 dose	84	90634
Hep A, pediatric, unspecified formulation	31	
Hep A, unspecified formulation	85	90730
Hep A-Hep B, pediatric/adolescent	193	
Hep B, adolescent/high risk infant	42	90745
Hep B, unspecified formulation	45	90731
Hep C	58	
Hep E	59	
HepB recombinant, 3-antigen, Al(OH)3	220	90759
herpes simplex 2	60	
Hib (HbOC)	47	90645
Hib (PRP-D)	46	90646
Hib, unspecified formulation	17	90737
Hib-Hep B	51	90748
HIV	61	

CVX Short Description	CVX Code	CPT Code
HPV, bivalent	118	90650
HPV, unspecified formulation	137	
IG, unspecified formulation	14	90741
influenza nasal, unspecified formulation	151	
influenza, H5N1-1203	123	
influenza, intradermal, quadrivalent, preservative free	166	90630
influenza, seasonal, intradermal, preservative free	144	90654
Influenza, Southern Hemisphere	194	
influenza, Southern Hemisphere, high-dose, quadrivalent	231	
influenza, Southern Hemisphere, pediatric, preservative free	200	
Influenza, Southern Hemisphere, quadrivalent, PF	201	
influenza, Southern Hemisphere, quadrivalent, with preservative	202	
Influenza, Southern Hemisphere, trivalent, PF	331	
influenza, split (incl. purified surface antigen)	15	
influenza, unspecified formulation	88	90724
influenza, whole	16	90659
Influenza-avian, H5, unspecified formulation	323	
Japanese encephalitis SC	39	90735
Japanese Encephalitis, unspecified formulation	129	
Junin virus	63	
leishmaniasis	64	
leprosy	65	
Lyme disease	66	90665
M/R	04	90708
malaria	67	
measles	05	90705
melanoma	68	
meningococcal A polysaccharide (non-US)	191	
meningococcal AC polysaccharide (non-US)	192	
meningococcal ACWY, unspecified formulation	108	
meningococcal B, unspecified	164	
meningococcal C conjugate	103	
Meningococcal C/Y-HIB PRP	148	90644
meningococcal MCV4, unspecified formulation	147	
meningococcal MPSV4	32	90733
meningococcal, unknown serogroups	167	
mumps	07	90704
no vaccine administered	998	
Novel influenza-H1N1-09	127	90668
Novel Influenza-H1N1-09, all formulations	128	90470
Novel Influenza-H1N1-09, nasal	125	90664
Novel influenza-H1N1-09, preservative-free	126	90666
OPV ,monovalent, unspecified	179	
OPV bivalent	178	

CVX Short Description	CVX Code	CPT Code
OPV, trivalent	02	
OPV, Unspecified	182	90712
parainfluenza-3	69	
PCV10	177	
pertussis	11	
plague	23	90727
pneumococcal conjugate PCV 7	100	90669
Pneumococcal Conjugate, unspecified formulation	152	
pneumococcal, unspecified formulation	109	
polio, unspecified formulation	89	
Poliovirus, inactivated, fractional-dose (fIPV)	324	
Q fever	70	
rabies, intradermal injection	40	90676
rabies, intramuscular injection	18	
rabies, unspecified formulation	90	90726
RESERVED - do not use	99	
Respiratory syncytial virus (RSV) MAB, unspecified	315	
Respiratory syncytial virus (RSV) vaccine, unspecified	314	
Respiratory syncytial virus (RSV), unspecified	304	
rheumatic fever	72	
Rho(D) - Unspecified formulation	159	
Rift Valley fever	73	
rotavirus, tetravalent	74	
rotavirus, unspecified formulation	122	
RSV-IGIV	71	
RSV-MAb (new)	145	
rubella	06	90706
rubella/mumps	38	
SARS-COV-2 (COVID-19) vaccine, UNSPECIFIED	213	
SARS-COV-2 COVID-19 DNA Non-US Vaccine (Zydus Cadila, ZyCoV-D)	514	
SARS-COV-2 COVID-19 PS Non-US Vaccine (Anhui Zhifei Longcom, Zifivax)	513	
SARS-COV-2 COVID-19 PS Non-US Vaccine (Biological E Limited, Corbevax)	517	
SARS-COV-2 COVID-19 PS Non-US Vaccine (Medigen, MVC-COV1901)	515	
SARS-COV-2 COVID-19 VLP Non-US Vaccine (Medicago, Covifenz)	512	
Staphylococcus bacterio lysate	76	
Td (adult)	138	
Td(adult) unspecified formulation	139	
Td, adsorbed, preservative free, adult use, Lf unspecified	196	
tetanus immune globulin	180	
tetanus toxoid, adsorbed	35	90703
tetanus toxoid, not adsorbed	142	

CVX Short Description	CVX Code	CPT Code
tetanus toxoid, unspecified formulation	112	
Tick-borne encephalitis vaccine (non-US)	77	
Tick-borne encephalitis, unspecified	222	
TST, unspecified formulation	98	
TST-OT tine test	95	
TST-PPD intradermal	96	
TST-PPD tine test	97	
tularemia vaccine	78	
Typhoid conjugate vaccine (TCV)	190	
typhoid, parenteral	41	90692
typhoid, parenteral, AKD (U.S. military)	53	90693
typhoid, unspecified formulation	91	
typhus, historical	131	
unknown	999	
vaccinia (smallpox) diluted	105	
Vaccinia (smallpox, mpox), unspecified	325	
VEE, inactivated	81	
VEE, live	80	
VEE, unspecified formulation	92	
VZIG (IND)	117	
Yellow fever, unspecified	184	
zoster live	121	90736
zoster, unspecified formulation	188	

## Non-Specific Formulations

Below is a table of codes that should rarely be sent in an HL7 message. These codes could impact how a provider continues to immunize a patient and are not specific enough to enable the IMR forecaster to predict the next scheduled immunization correctly.

CVX Short Description	CVX Code	CPT Code
Adenovirus, unspecified formulation	82	
Anthrax vaccine, unspecified	319	
Cholera, unspecified formulation	26	
COVID-19 vaccine, unspecified	213	
COVID-19 Non-US Vaccine, Product Unknown	500	
DTaP, unspecified formulation	107	
Ebola, unspecified	214	
Hep A, pediatric, unspecified formulation	31	
Hep A, unspecified formulation	85	90730
Hep B, unspecified formulation	45	90731
Hib, unspecified formulation	17	90737
HPV, unspecified formulation	137	
IG, unspecified formulation	14	90741
Influenza, unspecified formulation	88	90724
Influenza-avian, H5, unspecified formulation	323	
Influenza nasal, unspecified formulation	151	
Influenza, Southern Hemisphere, unspecified formulation	194	
Japanese Encephalitis, unspecified formulation	129	
Meningococcal ACWY, unspecified formulation	108	
Meningococcal B, unspecified formulation	164	
Meningococcal MCV4, unspecified formulation	147	
OPV, unspecified formulation	182	
OPV, monovalent, unspecified (Non-US)	179	
Pneumococcal, unspecified formulation	109	
Pneumococcal Conjugate, unspecified formulation	152	
Polio, unspecified formulation	89	
Rabies, unspecified formulation	90	90726
Respiratory syncytial virus (RSV), unspecified	304	
Respiratory syncytial virus (RSV) MAB, unspecified	315	
Respiratory syncytial virus (RSV) vaccine, unspecified	314	
Rotavirus, unspecified formulation	122	
Td(adult) unspecified formulation	139	
Td, adsorbed, preservative free, adult use, Lf unspecified	196	
Tetanus toxoid, unspecified formulation	112	
Tick-borne encephalitis, unspecified	222	
Typhoid, unspecified formulation	91	
Yellow Fever, unspecified formulation	184	
Zoster, unspecified formulation	188	

## Other Gold Standard Immunization Best Practices

Below reflects additional fields that are extremely helpful in vaccine ordering, reminder/recall, adverse reactions, and running IMR reports.

### Entering VFC Eligibility

VFC Eligibility is a recommended field for HL7 for patients under the age of 19 when entering in current immunizations. VFC Eligibility will correctly identify an immunization as publicly supplied or privately purchased. These statistics help the Immunization Program determine how much supply is needed to immunize the under 19 population.

The table below reflects the VFC Eligibility codes to be sent within the HL7 message.

VFC Code	VFC Status
V01	Not VFC Eligible
V02	VFC Eligible - Medicaid/Medicaid Managed Care
V03	VFC Eligible - Uninsured
V04	VFC Eligible - American Indian/Alaskan Native
V05	VFC Eligible - Federally Qualified Health Center/Underinsured
V07 *	SCHIP (not VFC eligible)

\*NOTE: V07 is only accepted for backward compatibility

### Entering Immunization Lot Number and Expiration Date

Entering this information reflects a current immunization and can be invaluable in times of recall. Patients can be notified and appropriate action taken to revaccinate, if required. These fields are strongly recommended by CDC on a national level.

### Entering Immunization Manufacturer

This field is sent using an MVX code and should always be filled in when entering a lot number. The table below represents the valid codes to be sent within the HL7 message.

Manufacturers Name	MVX Code
Abbott Laboratories	AB
Adams Laboratories, Inc.	AD
Alpha Therapeutic Corporation	ALP
AstraZeneca	ASZ
Barr Laboratories	BRR
Bavarian Nordic A/S	BN
Baxter Healthcare Corporation	BAH
Bharat Biotech International Limited (Non-US COVID-19 Manufacturer-WHO Authorized)	BBI
Berna Products Corporation	BPC
Biotest Pharmaceuticals Corporation	BTP
bioCSL	CSL

<b>Manufacturers Name</b>	<b>MVX Code</b>
CanSino Biologics, Inc (Non-US COVID-19 Manufacturer-WHO Authorized)	CAN
Crucell	CRU
Dynaport	DYN
Dynavax, Inc.	DVX
DynPort Vaccine Company, LLC	DVC
Emergent BioSolutions	MIP
GeoVax Labs, Inc.	GEO
GlaxoSmithKline	SKB
Greer Laboratories, Inc.	GRE
Grifols	GRF
ID Biomedical	IDB
Immuno-U.S., Inc.	IUS
Intercell Biomedical	INT
Janssen	JSN
Johnson and Johnson	JNJ
Kedrian Biopharma	KED
Korea Green Cross Corporation	KGC
Massachusetts Biologic Laboratories	MBL
MCM Vaccine Company	MCM
Medicago, Inc (Non-US COVID-19 Vaccine Manufacturer - ACIP recognized)	MDO
MedImmune, Inc. (AstraZeneca)	MED
Merck & Co., Inc.	MSD
Moderna US, Inc.	MOD
MSP Vaccine Company (partnership Merck and Sanofi Pasteur)	MSP
NABI	NAB
New York Blood Center	NYB
Novartis Pharmaceutical Corporation	NOV
Novavax, Inc.	NVX
Organon Teknika Corporation	OTC
Ortho-clinical Diagnostics	ORT
Other manufacturer	OTH
Emergent Travel Health, Inc (formerly PaxVax)	PAX
Pfizer, Inc	PFR
Protein Sciences	PSC
Sanofi Pasteur	PMC
Sclavo, Inc.	SCL
Seqirus	SEQ
Sinovac (Non-US COVID-19 Vaccine Manufacturer - WHO Authorized)	SNV
Sinopharm-Biotech (Non-US COVID-19 Vaccine Manufacturer - WHO Authorized)	SPH
Talecris Biotherapeutics	TAL
The Research Foundation for Microbial Diseases of Osaka University (BIKEN)	JPN
TEVA Pharmaceuticals USA	TVA
United States Army Medical Research and Material Command	USA
Unknown manufacturer	UNK
Valneva	VAL

Manufacturers Name	MVX Code
VBI Vaccines, Inc	VBI
Vetter Pharma Fertigung GmbH & Co. KG	VET
Wyeth	WAL

## Entering Route

This field is strongly recommended by CDC on a national level. The table below reflects the codes to be sent within the HL7 message.

Administration Route	Accepted Route Code
Intradermal	ID
Intramuscular	IM
Intranasal	NS
Intravenous	IV
Oral	PO
Subcutaneous	SC
Transdermal	TD

## Entering Administration Site

This field is strongly recommended by CDC on a national level. The table below reflects the codes to be sent within the HL7 message.

Administration Site	Accepted Site Code
Left Thigh	LT
Left Arm	LA
Left Deltoid	LD
Left Gluteus Medius	LG
Left Vastus Lateralis	LVL
Left Lower Forearm	LLFA
Right Arm	RA
Right Thigh	RT
Right Vastus Lateralis	RVL
Right Gluteus Medius	RG
Right Deltoid	RD
Right Lower Forearm	RLFA

\*NOTE: For intranasal and oral vaccines, there is no valid site code and this field should be left blank if an immunization is administered via either of these two routes.

## **Identifying Immunizations as Current vs Historical**

It is important to accurately identify immunizations as current or administered versus historical. If an immunization is selected as administered or current in the EHR, the code 00 will come over in the administration notes field in the HL7 message. This identifies the immunization as administered and all vaccine information will be stored (Admin Date, CVX, Lot, MVX, Route, Site, Exp Date). If an immunization is selected as historical in the EHR, the code 01 will come over in the administration notes field in the HL7 message. This identifies the immunization as historical and information stored for that immunization will only include Date of Administration, CVX Code and Lot Number.

## **Sending All Immunizations Entered**

If a patient is new to the practice, immunizations given elsewhere should be entered – because the full immunization history is important for determining which immunizations to administer. These are important to the Immunization Registry as well.

When sending immunization data, it is important to ensure that all immunizations entered into the EHR are going to be sent via HL7. Though not all systems may have this capability, when sending real-time data, this means sending both the immunizations administered today AND the immunizations entered today that were given in the past. If able, please be sure all immunizations entered into the system today are sent, not just those you administered.