**28 December 2020**

MHS Genesis Immunization Table

for the

MHS Data Repository (MDR)

(Version 1.00.05)

Future Specification

Revision History

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Date | Originator | Para/Tbl/Fig | Description of Change |
| 1.00.00 | 02/16/2018 | C. Kangas | Initial Document | Baseline |
| 1.00.01 | 11/15/2018 | C. Kangas | Table 5 | Added additional fields |
| 1.00.02 | 01/14/2019 | C. Kangas | Table 5 | Updated field widths |
| 1.00.03 | 07/31/2019 | C. Kangas | Table 5 | Updated business rule for ADMIT\_FACILITY and ADMIT\_NURSE\_UNIT. |
| 1.00.04 | 07/07/2020 | C. Kangas | Table 5 | Added Result Status |
| 1.00.05 | 12/28/2020 | C. Kangas | Table 4 and Table 5 | Added Orderable Display and Orderable Mnemonic |

# MDR Genesis Immunization Table

1. Background

This specification describes the process required to create the Military Health System (MHS) Data Repository (MDR) Genesis Immunization table based on data received from Cerner PowerInsight Enterprise Data Warehouse (PI-EDW) feeds to the MDR.

1. Sources

The source data files used to create the MDR Genesis Immunization table are extracted from the MHS Genesis PI-EDW. The transfer of the raw source extracts is handled by the Solution Delivery Division (SDD) for loading into the MDR for further processing according to routine MDR operations. The primary source file used to build the table are identified in Table 1. The format of the raw MHS Genesis feeds to the MDR is described in the DHMSM Interface Control Document (ICD) ####-####.

**Table 1: PI-EDW Source Table**

| **Source Table** | **Raw Data Feed** | **Feed Description** |
| --- | --- | --- |
| Clinical Events | wh\_cln\_clinical\_event.txt | This table contains lab results, vital signs, immunizations, and other patient care documentation data. |

1. Transmission (Files and Frequency)

Source files are provided according to the frequency described in the table below.

**Table 2: Frequency of Source Files**

|  |  |
| --- | --- |
| **Source File** | **Frequency** |
| MHS Genesis PI-EDW feeds | Weekly |

1. Organization and batching

Source Data: The first step in MDR processing is to batch records received from MHS Genesis. Raw data batches are stored in /mdr/raw/genesis according to routine MDR operating procedures.

Output Products: The MDR Genesis Immunization processor outputs a single SAS data set containing all years of immunizations. The processor performs merges and field derivations, and must incorporate updates to immunization records across raw data extracts. Table 3 contains the location and name of the output product. The preparation of the output is described in subsequent sections of this document.

**Table 3: MDR Genesis Immunization Processor Output Product**

|  |  |  |
| --- | --- | --- |
| **MDR Immunization Processor** | **File Naming Convention** | **Member Name** |
| MDR Immunization SAS data set  | /mdr/pub/genesis/imm/ | immunization.sas7bdat |

Archival of files is also required, so that corresponding “apub” and other processing files (i.e. log, aprod, etc) are also loaded into the MDR according to routine operating procedures.

1. Receiving Filters

Remove any immunization records for test patients.

1. Update processes

The raw feeds for the clinical events data type containing the immunization information represent either insert or update records. These records shall be used to maintain the master MDR immunizations dataset. From the Clinical Events data, immunization records are selected where the EVENT\_CLASS\_REF field = 228. All other clinical events records are excluded from further processing.

The primary key for the Clinical Events table is the CLINICAL\_EVENT\_KEY field. During the extraction of the raw immunization records, de-duplication of records, or anytime a clinical event key collision occurs between incoming data and existing master data, the processor de-duplicates data by selecting the record with the most recent value of the Update Date (UPDT\_DT\_TM) for any multiple of records with the same primary key (CLINICAL\_EVENT\_KEY).

Once the dataset has been updated, the processor assigns many other internally-derived variables as described in Table 5.

1. Field Transformations and File Types

This section of this functional specification describes the data merges that are necessary to append many of the fields in the MDR Genesis Immunization data. The merges required to prepare the MDR Genesis Immunization File are described in Table 4.

**Table 4: Additional File Merges**

| **Merge** | **Date and Key Matching** | **Purpose** |
| --- | --- | --- |
| Longitudinal VM | Admission Date, EDIPN | DEERS LVM adds many useful MHS specific demographic fields. |
| Medication Administration | event\_sk | This table stores immunization related med administration fields. |
| MDR Genesis Person | person\_sk | This table stores patient demographics. |
| MDR Genesis Personnel | personnel\_sk | This table stores the values for provider such as Provider EDIPN. |
| MDR Genesis Location | location\_sk | This table stores values describing the care location. |
| Encounter | encounter\_sk | This table stores key fields related to the immunization encounter. |
| Orders | order\_sk | This table stores fields related to the immunization ordered. |
| Code Value Reference | Multiple | This table stores lookup values for other codes such as the facility description. |
| Code Value Outbound Reference | Multiple | This table stores code value reference (lookup) descriptions specific to the DoD. |
| DMISID Index | FY, DMISID and DENRSITE | This join is used to add enrollment region information. |
| Omni-CAD | ADMIT\_DT\_TM, DEERSZIP, DSVCAGG | This join is used to add residence region information. |

Business rules for each of the appended fields that result from the file merges and formats are described in the body of Table 5.

1. record layout and content

The MDR Genesis Immunization data is stored as one SAS dataset. The dataset file name is immunization.sas7bdat. The dataset is prepared according to the derivation rules listed in Table 5.

**Table 5: MDR Genesis Immunization SAS Data Set**

| **Field** | **SAS Name** | **Format** | **Related Source Field** | **Business Rule** |
| --- | --- | --- | --- | --- |
| MHS Genesis Person ID | PERSON\_SK | $100 | person\_sk | No transformation. |
| Immunization Name | IMMUNIZATION | $60 | event\_code\_ref | Match to code\_value\_ref table where event\_code\_ref matches the code\_value\_ref and code\_set=72 and health\_system\_id=18635 and retrieve desc\_description. |
| Immunization CVX Code | CVX | $13 | event\_code\_ref | Match to code\_value\_out\_ref table where event\_code\_ref matches the code\_value\_ref and contributor\_source\_ref = 18024127 and health\_system\_source\_id=18635 and retrieve alias. |
| MHS Genesis Personnel ID | PERFORMED\_ PRSNL | $100 | performed\_prsnl | No transformation. |
| MHS Genesis Encounter ID | ENCOUNTER\_SK | $100 | encounter\_sk | No transformation. |
| MHS Genesis Order ID | ORDER\_SK | $100 | order\_sk | No transformation. |
| MHS Genesis Clinical Event Key | CLINICAL\_ EVENT\_ KEY | N(8) | clinical\_event\_key | No transformation. |
| MHS Genesis Event ID | EVENT\_SK | $100 | event\_sk | No transformation. |
| Sequence | CLINICAL\_SEQ | N(8) | clinical\_seq | No transformation. |
| Data Entry Method | DATA\_ENTRY\_ METHOD | $33 | data\_entry\_method\_ ref | Match to code\_value\_ref table where data\_entry\_method\_ ref matches the code\_value\_ref and code\_set= 29520 and health\_system\_id=18635 and retrieve desc\_description. |
| Contributor System | CONTRIBUTOR\_ SYSTEM | $60 | contributor\_system\_ref | Match to code\_value\_ref table where contributor\_system\_ref matches the code\_value\_ref and code\_set= 89 and health\_system\_id=18635 and retrieve desc\_description. |
| Health System Source  | HEALTH\_SYSTEM\_ SOURCE\_ID | N(8) | health\_system\_source\_id | No transformation. |
| Result Status | RESULT\_STATUS | $40 | result\_status\_ref | Match to code\_value\_out table where result\_status\_ref matches the code\_value\_ref, and code\_set = 8, and health\_system\_id = %mhs\_hssi to retrieve desc\_description. |
| **MDR Genesis Person Table Merge** |
| Medical Record Number | MRN | $40 | N/A | No transformation. |
| EDIPN | EDIPN | $10 | N/A | No transformation. |
| Patient Social Security Number | PATSSN | $9 | N/A | No transformation. |
| Sponsor Social Security Number | SPONSSN | $9 | N/A | No transformation. |
| Patient Date of Birth | DOB | Date/Time | N/A | No transformation. |
| Patient Gender | GENDER | $1 | N/A | No transformation. |
| Test Patient Indicator | TEST\_RECORD\_IND | N(8) | N/A | No transformation. |
| **MDR Genesis Personnel Table Merge** |
| Provider EDIPN | PROV\_EDIPN | $10 | N/A | No transformation. |
| Provider NPI | PROV\_NPI | $100 | N/A | No transformation. |
| Provider Skill Type | SKILL\_TYPE | $1 | N/A | No transformation. |
| **Medication Administration Table Merge** |
| Date Given | DATE\_GIVEN | Date/Time | start\_dt\_tm | Converted to local time. |
| Dosage | DOSAGE | N(8) | dosage | No transformation. |
| Dosage Unit | DOSAGE\_UNIT | $60 | dosage\_unit\_ ref | Match to code\_value\_ref table where dosage\_unit\_ref matches the code\_value\_ref and code\_set= 54 and health\_system\_id=18635 and retrieve desc\_description. |
| Lot Number | SUBSTANCE\_LOT\_ NBR | $100 | substance\_lot\_nbr | No transformation. |
| Manufacturer Code | SUBSTANCE\_ MANUFACTURER | $60 | substance\_ manufacturer\_ref | Match to code\_value\_ref table where substance\_manufacturer\_ref matches the code\_value\_ref and code\_set= 221 and health\_system\_id=18635 and retrieve desc\_description. |
| Route of Administration | ROUTE | $31 | route\_ref | Match to code\_value\_ref table where route\_ref matches the code\_value\_ref and code\_set= 4001 and health\_system\_id=18635 and retrieve desc\_description. |
| Site of Administration | SITE | $22 | site\_ref | Match to code\_value\_ref table where site\_ref matches the code\_value\_ref and code\_set= 97 and health\_system\_id=18635 and retrieve desc\_description. |
| Immunization Type | IMMUNIZATION\_ TYPE | $9 | immunization\_type\_ref | Match to code\_value\_ref table where immunization\_type\_ref matches the code\_value\_ref and code\_set= 30260 and health\_system\_id=18635 and retrieve desc\_description. |
| Strength Dose | STRENGTH | N(8) | strength\_unit | No transformation. |
| Strength Dose Unit | STRENGTH\_UNIT\_REF | $40 | strength\_unit\_ref |  |
| Administering Personnel | ADMIN\_PRSNL | $100 | admin\_prsnl | No transformation. |
| Update Datetime | UPDT\_DT\_TM | Date/Time | updt\_dt\_tm | No transformation. |
| **Encounter Table Merge** |
| Financial Number | FIN | $40 | formatted\_financial\_ number | No transformation. |
| Encounter Type | ENCOUNTER\_ TYPE | $22 | patient\_type\_ref | Apply format from code\_value\_ref where health system source ID = 18635, active\_ind=1, code set=71 and retrieve desc\_description |
| Admission Date | ADMIT\_DT\_TM | Date/Time | admit\_dt\_tm | Converted to local time. |
| **Orders Table Merge** |
| Orderable Display | ORDERABLE\_DISP | $200 | orderable\_disp | No transformation. |
| Orderable Mnemonic | ORDERABLE\_MNEMONIC | $200 | orderable\_mnemonic | No transformation. |
| **MDR Location table Merge** |
| DMISID | DMISID | $4 | mtf | No transformation. |
| MEPRS Code | MEPRS4CD | $4 | meprs\_cd | No transformation. |
| MHS Genesis Facility | ADMIT\_FACILITY | $50 | loc\_facility\_desc | No transformation. |
| MHS Genesis Nurse Unit | ADMIT\_NURSE\_ UNIT | $30 | unit\_display | No transformation. |
| **LVM Merge** |
| DEERS Alternate Care Value | ACV | $1 |  | Fill with ACV from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the ACV, else if ACV is blank after LVM merge and bencat is ACT or GRD then set ACV to M, otherwise set to blank. If no match for the person, set to blank. Blank fill for Date Given after Jan 1, 2018. |
| DEERS Beneficiary Category | BENCAT | $3 |  | Fill with DEERS beneficiary category from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the DEERS beneficiary category. If no match for the person, set to “Z”. |
| DEERS Common Beneficiary Category | COMBEN | $1 |  | Fill with DEERS common beneficiary category from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the DEERS common beneficiary category. If no match for the person, set to “3”. |
| DEERS ZIP Code | DEERSZIP | $5 |  | Fill with DEERS ZIP code from LVM based on EDIPN, if the Admit Date Is between the begin and end date associated with the DEERS ZIP code. If no match for the person, set to blank. |
| DEERS Enrollment DMIS Id | DENRSITE | $4 |  | Fill with enrollment DMISID from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the enrollment site. If no match for the person, set to blank. |
| DEERS Sponsor Service Aggregate | DSVCAGG | $1 |  | Fill with DEERS sponsor service (aggregate) from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the DEERS sponsor service (aggregate). If no match for the person, set to blank. |
| DEERS Sponsor Service | DSPONSVC | $1 |  | Fill with DEERS sponsor service from LVM based on EDIPN, if the Admit Date is between the begin and end date associated with the DEERS sponsor service. If no match for the person, set to blank. |
| DEERS Race Code | RACE | $1 |  | Fill with DEERS Race from LVM. If no match for the person, set to “Z”. |
| DEERS Ethnicity Code | ETHNIC | $1 |  | Fill with DEERS Ethnicity Code from LVM If no match for the person, set to “Z”. |
| DEERS HCDP Enrolled | HCDP\_ENR | $3 | d\_mi\_hcdp\_pln\_cvg\_cd | If the Admit Date is between the begin and end date of D\_MI\_HCDP\_PLN\_CVG\_CD then fill with D\_MI\_HCDP\_PLN\_CVG\_CD else leave blank; see VM=6 specification, section G18 and 19 for segment and field position. If no match for the person, set to blank. |
| DEERS HCDP Assigned | HCDP\_ASGN | $3 | asg\_hcdp\_pln\_cvg\_cd | If the Admit Date is between the begin and end date of asg\_hcdp\_pln\_cvg\_cd then fill with asg\_hcdp\_pln\_cvg\_cd else leave blank. |
| DEERS PCM ID | PCM\_ID | $18 | d\_mi\_pcm\_id | If the Admit Date is between the begin and end date of D\_ELG\_GRP\_CD then fill with D\_MI\_PCM\_ID else leave blank. |
| DEERS PCM ID Type | PCM\_TYPE | $1 | d\_mi\_pcm\_id\_typ\_cd | If the Admit Date is between the begin and end date of D\_ELG\_GRP\_CD then fill with D\_MI\_PCM\_ID\_TYP\_CD else leave blank. |
| Eligibility Group | ELG\_GRP | $1 | d\_elg\_grp\_cd | If the Admit Date is between the begin and end date of D\_ELG\_GRP\_CD then fill with D\_ELG\_GRP\_CD else leave blank; see VM=6 specification, section G18 and 19 for segment and field position.  |
| Enrollment Group | ENR\_GRP | $1 | d\_enr\_grp\_cd | If the Admit Date is between the begin and end date of D\_ENR\_GRP\_CD then fill with D\_ENR\_GRP\_CD else leave blank; see VM=6 specification, section G18 and 19 for segment and field position |
| **Fields from the Omni-CAD** |
| T3 Residence Region | BEN\_T3\_REG | $2 |  | Based on matching FY, FM and DEERSZIP; Set equal to T3\_REG. If zip code not found in MDR Omni-CAD, leave blank. |
| T17 Residence Region | BEN\_T17\_REG | $2 |  | Based on matching FY, FM and DEERSZIP; Set equal to T17\_REG. If zip code not found in MDR Omni-CAD, leave blank. |
| **Fields from the DMISID Index Table (joined by DENRSITE)** |
| Enrollment T3 Region | ENR\_T3\_REG | $2 |  | After matching on FY and DENRSITE, set to T3\_reg |
| Enrollment T17 Region | ENR\_T17\_REG | $2 |  | After matching on FY and DENRSITE, set to T17\_reg |
| **Internally-Derived Fields** |
| Fiscal Month | FM | $2 |  | Fiscal month of Date Given  |
| Fiscal Year | FY | $4 |  | Fiscal Year of Date Given |
| Fiscal Year Encounter | FY\_ENC | $4 |  | Fiscal Year of ADMIT\_DT\_TM |
| Patient Age | PATAGE | 3 |  | Derive from Patient Date of Birth and Admit Date. |
| Age Group | AGEGRP | $1 |  | Derive from PATAGE |
| ACV Group | ACVGROUP | $2 |  | Derive from ACV |

1. Refresh Frequency

Frequency of updates:

* Weekly
1. Data Quality

It is expected that when the MDR Genesis Immunization processor is run each week, that basic quality checks are performed throughout the process. It is recommended that the SDD vendor develop a spreadsheet which tracks key characteristics of the data across processing cycles; making it relatively easy to understand how the data should generally look. SDD vendors need to review these statistics each month prior to releasing the data. Decision Support Division (DSD) (the functional proponent and the specification author) should be contacted immediately should any quality issues arise. These checks, at a minimum, should include:

* Total record counts in the data feed should have a relatively stable distribution across FY and FM. Any anomalies should immediately be investigated.
* The percentage of records ‘cleaned out’ each processing cycle should be similar in scope and proportion across processing cycles.
* The number of records that match when doing the Genesis Patient table merge should be consistent.
* The distribution of all categorical fields (ex. Immunization) should be consistent. The results of proc freq analyses will verify this.
* The number of null values for important fields such as EDIPN, Date Given, and Immunization CVX should be tracked across monthly updates.
* When reading in the immunization data feed, a small number of records should be printed off and manually inspected to ensure they have read in properly and the percentage of records that are deletes, inserts, and updates should be compared for consistency across processing cycles.
* Cross tabulations should be reviewed on derived elements to ensure the derivation logic works.
* A data flow tracker should be built to ensure that all records that are intended to make it into the final Immunization dataset do. In other words, all inserts, updates, and deletions should be tracked and explained in the data flow worksheet.