18 Apr 2019

MHS GENESIS Vitals File BDE 2.4
for the
MHS Data Repository (MDR)
(Version 1.00.00)

Current Specification

Revision History

Version	Date	Originator	Para/Tbl/Fig	Description of Change
1.00.00	**04/18/2019**	**B. Edwards**		• **Original version**

VITALS FOR GENESIS

I. SOURCE

The source system is the Cerner Millenium. All records are based on records sent from WH_CLN_CLINICAL_EVENT file. In order to increase the utility of this file, it is merged against other tables from Cerner Millenium [as well as other files on the MDR, as described below in Section VI.]

II. TRANSMISSION (Format and Frequency)

Buk data extract transmitted weekly according to ICD DHMSM DRAFT ICD_Tables_BDE: Clinical Events v1.0.0, 22 November 2017

III. 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/genesis/raw according to routine MDR operating procedures.

Output products: SAS datasets containing all vitals records where the encounter date is in a fiscal year. The Vitals files are stored at /mdr/pub/genesis/vitals/fyxx.sas7bdat

IV. RECEIVING FILTERS

Vitals are identified within the Clinical Events table where the health_system_id=18635 and event _code_ref is in the following list:

Event Code Reference	Event Code Definition
107856247	Numeric Pain Score
113087723	Tobacco used in past 12 months
1164536	Systolic Blood Pressure Supine
1164539	Diastolic Blood Pressure Supine
1164542	Diastolic Blood Pressure Sitting
1164545	Systolic Blood Pressure Sitting
1164548	Systolic Blood Pressure Standing
1164551	Diastolic Blood Pressure Standing
1164554	Pulse Sitting
1164557	Pulse Standing
1164560	Pulse Supine
18244229	Pain Present
2670507	Corrective Lenses
26847707	O2 Sat Resting/Exertion Alpha
2700541	Heart Rate Monitored
3316585	Primary Pain Location
3320080	Menstrual Status
40050733	How often do you drink alcohol
40050757	How many alcoholic drinks per day

Event Code Reference	Event Code Definition
4154120	Weight Measured
4154123	Weight Dosing
4154135	Weight Estimated
4154126	Height/Length Measured
4157752	Temperature Temporal Artery
4247435	Numeric Pain Score (0-10)
703306	Mean Arterial Pressure, Cuff
703498	Oxygen Saturation
703501	Systolic Blood Pressure
703511	Peripheral Pulse Rate
703516	Diastolic Blood Pressure
703526	Temperature Tympanic
703540	Respiratory Rate
703691	Heart Rhythm
704770	Tobacco Last Use
711255	Last Menstrual Period
711643	Eye, Right Visual Acuity
711646	Eye, Left Visual Acuity

All records were provided with the initial batch of data. Thereafter, new and changed records are sent each week.

V. UPDATE PROCESS

The primary key for the Vitals table is the clinical_event_key field. During the extraction of the raw Vitals 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/time (UPDT_DT_TM) for any multiple of records with the same primary key. Similar update processes are applied to the other raw data sets.

Once the raw data has been updated, the processor combines them as described here and assigns many other internally-derived variables as described in Table 2.

VI. FIELD TRANSFORMATIONS AND DELETIONS FOR MDR CORE DATABASE

This section of this functional specification describes the data merges that are necessary to append fields in the MDR Genesis Referral file. Table 1 describes additional files that are used in processing.

Merge	Date Matching	Additional Matching
Code Value Outbound Reference		health_system_source_id = 18635 and active_ind = 1
Encounter Flat File (for M2)		encounter_sk from Encounter file= encounter_sk from Clinical Events, where enc_type_class not in (“Recurring”, “Inpatient”) or MEPRS_cd = BIA

Merge	Date Matching	Additional Matching
MDR Genesis Person File		person_sk
Master Person Index (MPI)		edipn, ssn, gender_r, dob_r, last_name, first_name
Longitudinal VM6 (LVM6)	admit_dt_tm between the begin and end dates associated with the segment	EDIPN from LVM6 = EDIPN retrieved from Personnel
OMNI CAD	FY and FM of CAD = admit_dt_tm	patzip, sponsvc
DMIS ID Index	FY = visit_dt_enc	MTF and denrsite (2 separate merges)

Raw clinical event data in MHS Genesis are stored as one row per clinical event. For the MDR, these clinical events are "flattened" to represent one row per encounter.

Business rules for each of the appended fields are described in the body of the format table in Section VII.

The table below reflects the fields as they exist in the Vitals following processing. Other fields may be created to facilitate processing, but should not be included in the public use MDR file when it is posted. The public use MDR file is broken out by fiscal year based on encounter date and each is saved as a SAS dataset in the MDR.

Table 2: Fields in the MDR Genesis VITALS

	Format	SAS Name	Source Element	Transformation
Fields from the Encounter Flat File				
Genesis Person ID	$100	person_sk	person_sk	No transformation
Genesis Encounter ID	$100	encounter_sk	encounter_sk	No transformation
Fields from the Encounter Flat File				
Financial Number	$40	financial_nbr	fin	No Transformation
Genesis Encounter ID	$100	encounter_sk	encounter_sk	No transformation
Treatment MEPRS Code	$4	meprscd	meprscd	No transformation
Treatment MTF	$4	mtf	mtf	No transformation
Treatment Parent MTF	$4	mtf_parent	mtf_parent	No transformation
Encounter Type	$42	encounter_type	encounter_type	No transformation
Calendar Year	$4	cy	cy	No Transformation
Calendar Month	$2	cm	cm	No Transformation
Fiscal Year	$4	fy	fy	No Transformation
Fiscal Month	$2	fm	fm	No Transformation
Encounter Date	$8	visit_dt_enc	visit_dt	No transformation

	Format	SAS Name	Source Element	Transformation
Primary Provider Assigned DMIS ID	$4	prov_assig_dmisid	prov_mtfd_prim	No transformation
Primary Provider EDIPN	$10	prov_edipn	prov_edipn_prim	No transformation
Primary Provider Primary HIPAA Taxonomy	$10	hipaa_tax	prov_hipaa_prim	No transformation
Primary Provider NPI	$10	prov_npi	prov_npi_prim	No transformation
Primary Provider Skill Type	$1	prov_st	skillh_prim	No transformation
Fields from MHS Genesis Person File				
Person EDIPN	$10	edipn	edipn	No Transformation
SSN	$9	ssn	ssn	No Transformation
First Name	$100	first_name	first_name	No Transformation
Last Name	$100	last_name	last_name	No Transformation
MRN	$40	mrn	mrn	No Transformation
IPI	$10	Ipi	Ipi	No Transformation
Gender of Record	$10.	gender_r	gender	No Transformation
Date and Time of Birth of Record	Date/Time	dob_r	dob	No Transformation
ZIP Code of Record	$25	patzip_r	zip	No Transformation
Test Person Indicator	8	test_person_ind	test_record_ind	No Transformation
Fields from the MPI				
Sponsor SSN	$9	sponssn	spssn	If a record is found in the MPI with matching EDIPN or Patient SSN, fill with the Sponsor SSN from the MPI.
Person Association Reason Code	$2	parc	parc	If a record is found in the MPI with matching EDIPN or Patient SSN, fill with the PARC for the relationship between this patient and the sponsor on that record.
Fields from the LVM6				
Gender	$1	gender	gender	Fill with gender associated with this EDIPN. If not found and gender_r = F or M, set to gender_r.
Date of Birth	SAS Date	patdob	patdob	Fill with date of birth associated with this EDIPN
Marital Status of Record	$20	marital	marital	No Transformation
DEERS Sponsor Service Aggregate	$1	sponsvc	sponsvc	Fill with sponsvc code if the visit_dt_enc is between the begin and end date associated with the enrollment record.
DEERS Health Care Delivery Program Code – Enrolled	$3	hcdp	hcdp	Fill with enrollment HCDP code if the visit_dt_enc is between the begin and end date associated with the enrollment HCDP code.

	Format	SAS Name	Source Element	Transformation
DEERS Alternate Care Value	$1	acv	acv	Fill with acv if the visit_dt_enc is between the begin and end date associated with the enrollment record.
ACV Group	$2	acvgroup	acvgroup	Derived from ACV and comben (before 1/1/18) or enrollment group, PCM type, eligibility group, and comben (after 1/1/18). If there is no match for this patient in the LVM, set to O. See VM6 Specification, section G.3 for derivation.
DEERS Enrollment DMIS ID	$4	denrsite	denrsite	Fill with denrsite if the visit_dt_enc is between the begin and end date associated with the enrollment record.
DEERS Beneficiary Category	$3	bencat	bencat	Fill with bencat if the visit_dt_enc is between the begin and end date associated with the enrollment record.
DEERS Common Beneficiary Category	$1	comben	comben	Fill with comben if the visit_dt_enc is between the begin and end date associated with the enrollment record.
DEERS Zip Code	$5	patzip	patzip	Fill with patzip if the visit_dt_enc is between the begin and end date associated with the enrollment record.
Race of Record	$41	race	race	No Transformation
Ethnic Group of Record	$1	ethnic	ethnic	No Transformation
Enrollment Group	$1	enr_grp	enr_grp	Fill with enr_grp if the visit_dt_enc is between the begin and end date associated with the enrollment record.
Eligibility Group	$1	elg_grp	elg_grp	Fill with elg_grp if the visit_dt_enc is between the begin and end date associated with the enrollment record.
PCM ID	$18	pcmid	pcmid	Fill with PCM ID if the visit_dt_enc on the vitals record is between the begin and end dates associated with the PCM ID. See VM6 Specification, Exhibits G-18 and 19 for segment and field positions.
PCM Type	$1	pcm_type	pcm_type	Fill with Enrollment PCM Type if the visit_dt_enc on the vitals record is between the begin and end date associated with the Enrollment PCM Type. If the visit_dt_enc is on or after 1/1/18 and the visit_dt_enc is outside of the dates associated with the Enrollment Group, or there is no match for this patient in the LVM, set to Z. If the visit_dt_enc is before 1/1/18, set to blank. See

	Format	SAS Name	Source Element	Transformation
				VM6 Specification, Exhibit G-19 for segment and field positions.
Medicare Eligibility Flag	$1	medicare_flag	medicare_flag	Fill with Medicare Eligibility Code if the visit_dt_enc on the vitals record is between the begin and end date associated with the Medicare Eligibility Code. If the visit_dt_enc is outside of the dates associated with the Medicare Flag, or there is no match for this patient in the LVM, set to N. See VM6 Specification, Exhibits G-18 and 19 for segment and field positions.
Privilege Code	$1	privilege	privilege	Fill with Medical Privilege Code if the visit_dt_enc on the vitals record is between the begin and end date associated with the Medical Privilege Code. If the visit_dt_enc is outside of the dates associated with the Privilege Code, or there is no match for this patient in the LVM, set to 9. See VM6 Specification, Exhibits G-18 and 19 for segment and field positions.
HCDP - Assigned	$3	hcdp_assgn	hcdp_assgn	Fill with hcdp_assgn if the visit_dt_enc is between the begin and end date associated with the enrollment record.
Fields from the DMIS ID Index Table (merging by mtf)				
Treatment Service	$1	txsvc	ubu_svc	After matching on fy and mtf, set to ubu_svc
Treatment Parent DMIS ID	$4	mtf_parent	ubu_par	After matching on fy and mtf, set to ubu_par
Treatment T3 Region	$2	mtf_t3_reg	t3_reg	After matching on fy and mtf, set to t3_reg
Treatment T17 Region	$2	mtf_t17_reg	t17_reg	After matching on fy and mtf, set to t17_reg
Treatment Major Command	$8	txcmnd	majcmnd	After matching on fy and mtf, set to majcmnd
Treatment MSM Area ID	$3	txmsma	msm_id	After matching on fy and mtf, set to msm_id
Fields from the DMIS ID Index Table (merging by denrsite)				
Enrollment Service	$1	enrsvc	ubu_svc	After matching on fy and denrsite, set to ubu_svc
Enrollment Site Parent DMIS ID	$4	enr_parent	ubu_par	After matching on fy and denrsite, set to ubu_par

	Format	SAS Name	Source Element	Transformation
Enrollment T3 Region	$2	enr_t3_reg	t3_reg	After matching on fy and denrsite, set to t3_reg
Enrollment T17 Region	$2	enr_t17_reg	t17_reg	After matching on fy and denrsite, set to t17_reg
Fields from the Omni-CAD				
Catchment Area ID	$4	catch	catch	Based on matching FY, FM and patzip; if sponsvc = A then set equal to AWORLD, if sponsvc = F then set equal to FWORLD; if sponsvc in (M, N, V) then set equal to NWORLD, otherwise set equal to OWORLD. If zip code not found in MDR Omni-CAD, set equal to '0999'
PRISM Area ID	$4	prism	prism	Based on matching FY, FM and patzip; if sponsvc = A then set equal to APRISM, if sponsvc = F then set equal to FPRISM; if sponsvc in (M, N, V) then set equal to NPRISM, otherwise set equal to OPRISM. If zip code not found in MDR Omni-CAD, set equal to '0999'
MTF Service Area ID	$4	mtfsvcarea	mtfsvcarea	Based on matching FY, FM and patzip; if sponsvc = A then set equal to ABPA, if sponsvc = F then set equal to FBPA; if sponsvc in (M, N, V) then set equal to NBPA, otherwise set equal to OPRISM. If zip code not found in MDR Omni-CAD, set equal to '0999'
T3 Residence Region	$2	ben_t3_reg	t3_reg	Based on matching FY, FM and patzip; Set equal to T3_REG. If zip code not found in MDR Omni-CAD, leave blank.
T17 Residence Region	$2	ben_t17_reg	t17_reg	Based on matching FY, FM and patzip; Set equal to T17_REG. If zip code not found in MDR Omni-CAD, leave blank.
Internally Derived Fields				
Age Group	$1	agegrp	N/A	If Patient Age is 0-4, set to A; if 5-14, B; if 18-24, C; if 25-34, D; if 35-44, F; if 45-64, G; if 65+, H; else X.
Alcohol Annoy		alcohol_annoy	N/A	TBD
Alcohol Cut Down		alcohol_cut_down	N/A	TBD
Alcohol Eye Opener		alcohol_eye_opener	N/A	TBD
Alcohol Frequency	$80	alcohol_freq	N/A	If event_code_ref = 40050733 then fill with result_value

	Format	SAS Name	Source Element	Transformation
Alcohol Use	$80	alcohol_use	N/A	If event_code_ref = 40050757 then fill with result_value
Mean Arterial Pressure, Cuff	$6	art_pressure_cuff	N/A	If event_code_ref = 703306 then fill with result_value
Corrective Lenses	$80	corr_lenses	N/A	If event_code_ref = 2670507 then fill with result_value
Diastolic Blood Pressure, no position reported	$6	diastolic_blank	N/A	If event_code_ref = 703516 then fill with result_value
Sitting Diastolic Blood Pressure	$6	diastolic_sit	N/A	If event_code_ref = 1164542 then fill with result_value
Standing Diastolic Blood Pressure	$6	diastolic_stand	N/A	If event_code_ref = 1164551 then fill with result_value
Supine Diastolic Blood Pressure	$6	diastolic_supine	N/A	If event_code_ref = 1164539 then fill with result_value
Heart Rate Monitored	$6	heart_rate_mon	N/A	If event_code_ref = 2700541 then fill with result_value
Height (in cm)	8	height_cm	N/A	If event_code_ref = 4154126 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “centimeter” then fill with result_value. Else convert height_inches to height_cm. Else leave blank.
Height (in inches)	8	height_inches	N/A	If event_code_ref = 4154126 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “inch” then fill with result_value. Else convert height_cm to height_inches. Else leave blank.
Last Menstrual Period	$80	mens_last	N/A	If event_code_ref = 711255 then fill with result_value
Menstrual Status	$80	mens_stat	N/A	If event_code_ref = 3320080 then fill with result_value
Oxygen Saturation	$6	oxygen_sat	N/A	If event_code_ref = 703498 then fill with result_value
O2 Sat Resting/Exertion Alpha	$6	oxygen_sat_rest	N/A	If event_code_ref = 26847707 then fill with result_value
Pain	$80	pain	N/A	If event_code_ref = 18244229 then fill with result_value

	Format	SAS Name	Source Element	Transformation
Primary Pain Location	$80	pain_loc	N/A	If event_code_ref = 3316585 then fill with result_value
Numeric Pain Score (0-10)	$80	pain_num	N/A	If event_code_ref = 4247435 then fill with result_value
Numeric Pain Score	$80	pain_score	N/A	If event_code_ref = 107856247 then fill with result_value
Patient Age	8	patage	N/A	Age in years from date of birth (from DEERS) to appointment date. If date of birth from DEERS is not available, use dob_r.
Peak Flow		peak_flow	N/A	TBD
Peripheral Pulse Rate	$6	pulse_periph	N/A	If event_code_ref = 703511 then fill with result_value
Sitting Heart Rate	$6	pulse_sit	N/A	If event_code_ref =1164554 then fill with result_value
Standing Heart Rate	$6	pulse_stand	N/A	If event_code_ref =1164557 then fill with result_value
Supine Heart Rate	$6	pulse_supine	N/A	If event_code_ref =1164560 then fill with result_value
Recent BMI	$1	recent_bmi	N/A	Sort data by encounter_sk and and visit_dt_enc (within each FY). Find the latest record where both HEIGHT_INCHES and WEIGHT_LBS are populated, and where HEIGHT_INCHES < 100 in. and WEIGHT_LBS < 1,000 lbs. This record will have RECENT_BMI = "Y". All other records in that fiscal year have RECENT_BMI = "N".
Respiratory Rate	$3	resp_rate	N/A	If event_code_ref = 703540 then fill with result_value
Respiratory Rate	$6	resp_rate	N/A	If event_code_ref = 703540 then fill with result_value
Heart Rhythm, no position reported	$80	rhythm_id_blank	N/A	If event_code_ref = 703691 then fill with result_value
Sitting Heart Rhythm		rhythm_id_sit	N/A	TBD
Standing Heart Rhythm		rhythm_id_stand	N/A	TBD
Supine Heart Rhythm		rhythm_id_supine	N/A	TBD

	Format	SAS Name	Source Element	Transformation
Systolic Blood Pressure, no position reported	$6	systolic_blank	N/A	If event_code_ref = 703501 then fill with result_value
Sitting Systolic Blood Pressure	$6	systolic_sit	N/A	If event_code_ref = 1164545 then fill with result_value
Standing Systolic Blood Pressure	$6	systolic_stand	N/A	If event_code_ref = 1164548 then fill with result_value
Supine Systolic Blood Pressure	$6	systolic_supine	N/A	If event_code_ref = 1164536 then fill with result_value
Temperature Temporal Artery (in Celsius)	8	temp_artery_c	N/A	If event_code_ref = 4157752 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Degrees Centigrade" then fill with result_value. Else convert temp_artery_f to temp_artery_c. Else leave blank.
Temperature Temporal Artery (in Fahrenheit)	8	temp_artery_f	N/A	If event_code_ref = 4157752 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Degrees Fahrenheit" then fill with result_value. Else convert temp_artery_c to temp_artery_f. Else leave blank.
Temperature Site ID	$1	temp_site_id	N/A	Any record with a populated tympanic temperature, has a temperature site id=E. Otherwise, this field is blank.
Tympanic Temperature (in Celsius)	8.	temp_tympanic_c	N/A	If event_code_ref = 703526 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Degrees Centigrade" then fill with result_value. Else convert temp_tymp_f to temp_tymp_c. Else leave blank.
Tympanic Temperature (in Fahrenheit)	8.	temp_tympanic_f	N/A	If event_code_ref = 703526 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Degrees Fahrenheit" then fill with result_value. Else convert temp_tymp_c to temp_tymp_f. Else leave blank.

	Format	SAS Name	Source Element	Transformation
Tobacco Used in Past 12 Months	$80	tob_12mon	N/A	If event_code_ref = 113087723 then fill with result_value
Tobacco User	$80	tobacco	N/A	If event_code_ref = 704770 then fill with result_value
Tobacco Amount Used		tobacco_amount	N/A	TBD
Tobacco Quit Desire		tobacco_quit	N/A	TBD
Tobacco Type Used		tobacco_type	N/A	TBD
Eye, Left Visual Acuity	$80	vis_acuity_l	N/A	If event_code_ref = 711646 then fill with result_value
Eye, Right Visual Acuity	$80	vis_acuity_r	N/A	If event_code_ref = 711643 then fill with result_value
Weight Dosing (Kg)	8	weight_dosing_kg	N/A	If event_code_ref = 4154123 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Kilogram" then fill with result_value. Else convert weight_dosing_lb to weight_dosing_kg. Else leave blank.
Weight Dosing (Lb)	8	weight_dosing_lb	N/A	If event_code_ref = 4154123 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Pound" then fill with result_value. Else convert weight_dosing_kg to weight_dosing_lb. Else leave blank.
Weight Estimated (Kg)	8	weight_est_kg	N/A	If event_code_ref = 4154135 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Kilogram" then fill with result_value. Else convert weight_est_lb to weight_est_kg. Else leave blank.
Weight Estimated (Lb)	8	weight_est_lb	N/A	If event_code_ref = 4154135 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Pound" then fill with result_value. Else

	Format	SAS Name	Source Element	Transformation
				convert weight_est_kg to weight_est_lb. Else leave blank.
Weight (in Kilograms)	8	weight_kg	N/A	If event_code_ref = 4154120 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Kilogram" then fill with result_value. Else convert weight_lb to weight_kg. Else leave blank.
Weight (in pounds)	8	weight_lb	N/A	If event_code_ref = 4154120 and if format applied to result_units_ref from code_value_out_ref where code_set = 54 contains “Pound" then fill with result_value. Else convert weight_kg to weight_lb. Else leave blank.

VII. REFRESH FREQUENCY

Weekly

VIII. DATA MARTS

N/A.

IX. SPECIAL OUTPUTS

N/A