Vital Signs

Various biometric (height/weight), vital sign (blood pressure) and lifestyle (tobacco use) measures taken periodically at medical encounters.

1. Overview

The vital signs table includes various physiological measures taken by health professionals during the clinic visit. The traditional clinical vital signs are body temperature, pulse rate, blood pressure, and respirations. Because of HMORN investigator interest, the VDW Vital Signs table also includes anthropometry (height, weight) and tobacco use.

2. Data Dictionary

Variable name	Type (Length)	Preferred Format	Description	Valid Values	Comments
MRN	char(varies)	n/a	An arbitrary identifier unique to an individual within a site.	Any, so long as they uniquely identify individual people.	Used to link people across files within a site. May or may not contain the official local indigenous person identifier (e.g., "medical record number"). **Regardless of whether it contains the official local identifier, this variable should never leave the site.** Projects needing to move individual-level data should create a study-specific person identifier and substitute it for MRN on any data that is to move (See, e.g., the %DeIDDset() standard macro.)
enc_id	As defined in Utilization encounters.	n/a	An arbitrary code providing a link to an	Varies by site.	This field is meant to provide more information about

			associated record in the utilization : encounters table, where a definitive match can be made.	Non-null values must match to a value in utilization : encounters.	the setting of a vitals measurement where available. It should only be populated if there is an encounter in the utilization file that can be definitively matched to the vital record. Many sites will have significant amounts of null values in this field. It should not be used as a unique visit identifier, as it can cause issues in merging.
measure_date	num(4)	mmddyy10	Date the vital signs were measured.	Any SAS date.	
measure_time	num(4)	timeampm11	Time at which the measures on this record were taken.	Any valid SAS Time value.	This may be the measurement of an actual blood pressure taken or it may be a check-in time from PAT_ENC. Please see note 4.
enctype	As defined in Utilization encounters.	n/a	Encounter Type	As defined in the Utilization encounters file.	This is only necessary b/c an Enc_ID won't always be available. Useful for interpreting e.g., BP measures--measures collected in different clinical contexts will have different interpretations (e.g., BP collected in ED trauma

					situation may not reflect typical BP).
ht	num(8)	6.2	Height in inches	Any positive real number. Null if height is missing or not expressed as a single number (e.g., a range is given, or just a description like "medium").	Only populate if height was measured on the date given in measure_date--do not impute or carry over from other dates.
wt	num(8)	7.2	Weight in pounds	Any positive real number. Null if weight is missing or not expressed as a single number (e.g., a range is given, or just a description like "normal").	Only populate if weight was measured on the date given in measure_date--do not impute or carry over from other dates.
systolic	num(4)	n/a	Systolic blood pressure in mmHg	Integers between 0 and 999	Only populate if the measure was taken on the date given in measure_date. Non-standard values may be suitable for the Raw versions of these variables. Please see Note 2 for details on those variables.
diastolic			Diastolic blood pressure in mmHg		
bp_type	char(1)	n/a	Optional. Type of blood pressure taken	R Rooming (BP off of Pat_Enc table, or final rooming blood pressure on chart) O Orthostatic M Multiple E Extended	Please see note 3.
position	char(1)	n/a			Please see note 3.

			Optional. Position for Orthostatic Blood Pressures	1 sitting 2 standing 3 supine Null unknown	
tobacco	num(3)	n/a	Tobacco Status	1 current user 2 never 3 quit/former user 4 passive 5 environmental exposure 6 not asked 7 conflicting	Include tobacco status as of the visit date. Unknown values should be left blank. The not asked value should be used only when it is a valid response from your system (e.g. this is a valid value for EPIC). The conflicting value should be used when you receive tobacco information from multiple sources that disagree.
tobacco_type	num(3)	n/a	Type of tobacco used.	1 Cigarettes only 2 Other tobacco only 3 Cigarettes and other tobacco 4 None	Unknown values should be left blank.
ht_raw	char(varies)	n/a	A free text field for use when height is not reported as a numeric or can not be converted to a numeric value.	Any.	Optional. Examples may include heights reported in ranges (e.g. 5'8" - 5'10") or categories (e.g.

					>95%tile for height in children). Do not modify/clean this field in any way.
wt_raw	char(varies)	n/a	WT_Raw is a free text field for use when weight is not reported or can not be converted to a numerical value.	Any	Optional. Examples may include weights reported in ranges (e.g. WEIGHT 180 -190) or categories (e.g. >95%tile for weight in children). Do not modify/clean this field in any way.
bmi_raw	char(varies)	n/a	Body mass index (kg/m^2)	Unique to each site. The main purpose of this variable is to facilitate capture of body mass information directly as taken from legacy electronic data (i.e., as BMI range or code).	Sites can include BMI, directly from EMR at their option. BMI as a variable derived (calculated) from height and weight should be calculated using algorithms provided by the Vitals work group. Please see Note 1.
head_cir_raw	char(varies)	n/a	Head Circumference (cm)	Include raw variable as found in source, without unit conversions	Head Circumference is used to calculate BMI for children. See the CDC Growth Charts for details.
systolic_raw diastolic_raw	char(varies)	n/a	The original systolic/diastolic blood pressure from the EMR.	Unique to each site.	The main purpose of these variables is to facilitate capture of systolic/diastolic information directly as taken from legacy electronic data (i.e., as a range or code).

					These are free text fields for use when the measure is not reported directly or can not be converted to a numeric value. Examples may include BP reported in ranges (e.g. 100 -110) or categories (e.g. HYPERTENSION). Please see note 2 for examples.
respir_raw	char(varies)	n/a	Respiration in breaths per minute	Include raw variable as found in source, without unit conversions	
temp_raw	char(varies)	n/a	Body temperature from the EMR	Include raw variable as found in source	
pulse_raw	char(varies)		Heartbeats per minute	Include raw variable as found in source	

3. Notes

Note 1: Body Mass Index (BMI) - Raw

BMI is a measure of relative body weight, derived (calculated from) weight and height. The recommended approach is to calculate BMI at the time it is actually needed, and write it out to another file, rather than computing it in advance and storing it in the Vitals Table. The main purpose of including a BMI variable (BMI_Raw) in the Vitals Table is to accommodate handling of values that may be stored in site electronic data as categorical values (e.g., corresponding to a range of BMI or to a diagnosis). For example, KPNC BMI data stored in legacy system could map to the Vital Signs BMI_Raw variable as follows (shown for illustrative purposes).

Source Value	BMI_RAW Value	Rationale
BODY MASS INDEX (BMI), ADULT =25	25.0-25.9	This is not an exact value, this is a range
BODY MASS INDEX (BMI) >=95%, OVERWEIGHT (PEDI)	>=95% OVERWEIGHT	This is a percentile; we want the "overweight" keyword
OBESITY, NOT CUSHING'S	OBESITY, NOT CUSHING'S	We want the "obesity" keyword
BODY MASS INDEX (BMI) >=40, ADULT	>=40.0	Don't care about adult/pedi keywords
Keywords of Interest		
OVERWEIGHT	OVERWEIGHT	
	OBESITY	

OBESITY (recode OBESE to OBESITY)		
MORBID (in conjunction with OBESITY)	OBESITY MORBID	
UNDERWEIGHT	UNDERWEIGHT	
do not include "AT RISK FOR OVER/UNDERWEIGHT"	would not include OVER/UNDERWEIGHT	"at risk" is not a *current* description
In general: Range first, keyword second, modifier third		

Note 2: Blood Pressure Measures - Raw

Diastolic_Raw/Systolic_Raw — These variables can be used for sites that have blood pressures reported in non-standard ways such as when blood pressure is reported as falling within a range of values, or through a diagnosis. It can be numeric, text or a combination of both. Each site will have different valid values, which will be documented in the Site Specific Notes. For example, KPNC Diastolic BP data stored in legacy system could map to the Vital Signs DIASTOLIC_Raw variable as follows (shown for illustrative purposes).

While it is the common practice for BP measures to be expressed in units of millimeters of mercury (mmHg) the values in systolic_raw and diastolic_raw may be in any units. Please see the site-implementation pages for details on what each site uses for units. It is *not* safe to assume mmHg.

Source Value	DIASTOLIC_RAW Value	Rationale
DIASTOLIC BP 100-109 (ADULT)	100-109	Diastolic BP is implied based on variable name, and do not care about adult/pedi keywords
HYPERTENSION SCREENING	Would not include	Not indicative of an actual blood pressure
HYPERTENSION, R/O	HYPERTENSION	

Note 3: BP Type and Position

Open for discussion. KPCO can provide Epic/Clarity code for those sites who would like to include these.

Note 4: Measure_Time

Should be used with discretion, since a final rooming blood pressure from PAT_ENC may the check-in time and therefore not appear to be then last blood pressure taken when compared to multiple vitals.

Note 5: Available Macros

Description	Macro
Calculates BMI for adults.	%GetAdultBMI
Calculate Days_Diff: The Days Difference variable will be used to ensure that the height and weight measurements were measured at close enough dates to be usable. Days_Diff can be either positive or negative. For example days_diff could be positive if height was measured at a date	Not yet provided.

earlier than weight, whereas it would be negative if height was measured at a date later than weight.	
Get Vital Signs: Pulls all vital signs between the supplied dates for the people listed in the user-supplied People dataset.	% GetVitalSignsForPeople
Clean Vitals: Performs a quality check on vital signs data reporting problem obs and variables and optionally producing datasets with problem and non-problem data.	%CleanVitals
BMI for 2-17 Year Olds	% GetKidBMIPercentiles
Convert Temperature from Celsius to Fahrenheit	Not yet provided.
Convert Temperature from Fahrenheit to Celsius	Not yet provided.

4. Future plans

The Vital Signs Work Group is working with the Obesity SIG to define extreme values and develop algorithms for calculating BMI and BMI percentiles. Similarly, we will collaborate with expert/special interest groups within the HMORN to define and refine out of range values for other measures.

5. Contact information:

Please contact the VDW Vital Signs working group for questions and suggestions. Working group contact information can be found in the VOC section of the CRN Portal.

Related content

- Sample Vital Signs Creation Code
- VitalSigns QA Workplan

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