ETL Conventions for use with PEDSnet CDM v3.2 OMOP V5.2

The PEDSnet Common Data Model is an evolving specification, based in structure on the OMOP Common Data Model, but expanded to accommodate requirements of both the PCORnet Common Data Model and the primary research cohorts established in PEDSnet.

Version 3.2 of the PEDSnet CDM reflects the ETL processes developed after several iterations of network development. As such, it proposes to align with version 4.1 of the PCORnet CDM.

This document provides the ETL processing assumptions and conventions developed by the PEDSnet data partners that should be used by a data partner for ensuring common ETL business rules. This document will be modified as new situations are identified, incorrect business rules are identified and replaced, as new analytic use cases impose new/different ETL rules, and as the PEDSnet CDM continues to evolve.

Comments on this specification and ETL rules are welcome. Please send email to pedsnetdcc@email.chop.edu, or contact the PEDSnet project management office (details available via http://www.pedsnet.info).

PEDSnet Data Standards and Interoperability Policies:

1. The PEDSnet data network will store data using structures compatible with the PEDSnet Common Data Model (PCDM).
2. The PEDSnet CDM v3.2 is based on the Observational Medical Outcomes Partnership (OMOP) data model, version 5.2.
3. A subset of data elements in the PCDM will be identified as principal data elements (PDEs). The PDEs will be used for population-level queries. Data elements which are NOT PDEs will be marked as Optional (ETL at site discretion) or Non-PDE (ETL required, but data need not be transmitted to DCC), and will not be used in queries without prior approval of site.
4. It is anticipated that PEDSnet institutions will make a good faith attempt to obtain as many of the data elements not marked as Optional as possible.
5. The data elements classified as PDEs and those included in the PCDM will be approved by the PEDSnet Executive Committee (comprised of each PEDSnet institution's site principal investigator).
6. Concept IDs are taken from OMOP 5 vocabularies for PEDSnet CDM v3.2, using the complete (restricted) version that includes licensed terminologies such as CPT and others.
7. PCORnet CDM v4.1 requires data elements that are not currently considered "standard concepts". Vocabulary version 5 has a new vocabulary (vocabulary*id=PCORNet) that was added by OMOP to capture all of the PCORnet concepts that are not in the standard terminologies. We use concept*ids from vocabulary*id=PCORNet where there are no existing standard concepts. We highlight where we are pulling concept*ids from vocabulary*id=PCORNet in the tables. While terms from vocabulary*id=PCORNet violates the OMOP rule to use only concept*ids from standard vocabularies vocabulary*id=PCORNet is a non-standard vocabulary), this convention enables a clean extraction from PEDSnet CDM to PCORnet CDM.
8. Some source fields may be considered sensitive by data sites. Potential examples include patient*source*value, provider*source*value, care*site*source*value. Many of these fields are used to generate an ID field, such as PERSON.patient*source*value PERSON.person*id, that is used as a primary key in PERSON and a foreign key in many other tables. Sites are free to obfuscate or not provide source values that are used to create ID variables. Sites must maintain a mapping from the ID variable back to the original site-specific value for local re-identification tasks.
    1. Source fields that contain clinical data, such as source condition occurrence, should be included
    2. The PEDSnet DCC will never release source values to external data partners.
    3. Source value obfuscation techniques may include replacing the real source value with a random number, an encrypted derivative value/string, or some other site-specific algorithm.
9. The PCORnet CDM has specific definitons for null values (as seen below). For the PEDSNet CDM, please use the following logic on which concept value to use for `source_concept_id` fields where there are null values in the source `*_source_value`.

Null Name	Definition of each field
NULL	A data field is not present in the source system. Note. This is not a 'NULL' string but the NULL value.
'NI' = No Information	A data field is present in the source system, but the source value is null or blank
'UN' = Unknown	A data field is present in the source system, but the source value explicitly denotes an unknown value
'OT' = Other	A data field is present in the source system, but the source value cannot be mapped to the CDM

Guidelines for populating `'*_concept_id'`, `'*_source_concept_id'` and `'*_source_value'` for flavors of null:

Null Name	'*conceptid'	'*sourceconcept_id'	'*sourcevalue'
'NI'	44814650	0	value as in source (leave as null)
'UN'	44814653	0	value as in source (denoting an unknown value)
'OT'	44814649	0	value as in source

10. **For populating `'*_source_concept_id'` (where there exists non-null values in the source) use the following Logic :**

Populate `'*_source_concept_id'` (i.e. non-zero) if the source_value is drawn from a standard vocabulary in OMOP.

Please use your local system knowledge to determine this or use the following criteria : All the values in the source*value field should be drawn from the concept*code in the concept table (for a given/relevant domain*id and a given vocabulary*id).

ELSE Use 0

(usually the case when the sites need to "manually" map the foo*source*value to foo*concept*id)

11. **For populating `*_source_value` please make a best effort to provide "human readable" values rather than a coded value where possible from the source.**

Example for `gender_source_value`, the source value at your site may be `1` for Female and `2` for Male. Please provide the label value of `Female` and `Male`.

ETL Recommendation: Due to PK/FK constraints, the most efficient order for ETL table is location, care*site, provider, person, visit*occurrence, condition*occurrence, observation, procedure*occurrence,measurement,measurement_organism,drug exposure

Table of Contents

[Appendix]

Data Extraction Guide

Please use the table headings as a guide in extracting and submitting data. These specifications are indicative of DCC and Network Requirements. All fields must be submitted to the DCC even if you are not submitting data in a field. Here are examples of how the specification should be interpreted:

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Field Name	• Yes	• Yes	Data Type	Description	PEDSnet Conventions

- **The above example indicates the data in this field is required by both the DCC and Network. It absolutely must be provided in the data submission.**

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Field Name	• No	• Provide When Available	Data Type	Description	PEDSnet Conventions

- **The above example indicates the data in this field is required by Network if it is populated or available at your site. If it is available it must provided in the data submission.**

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Field Name	• No	• Site Preference	Data Type	Description	PEDSnet Conventions

- **The above example indicates the data in this field is not required by the DCC or Network. A site may choose to send this information if they desire to do so.**

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Field Name	• No	• Optional	Data Type	Description	PEDSnet Conventions

- **The above example indicates the data in this field is truly optional for submission. A site may choose to send this information if they desire to do so.**

1.1 PERSON

The person domain contains records that uniquely identify each patient in the source data who is time at-risk to have clinical observations recorded within the source systems. Each person record has associated demographic attributes, which are assumed to be constant for the patient throughout the course of their periods of observation. All other patient-related data domains have a foreign-key reference to the person domain.

PEDSnet uses a specific definition of an active PEDSnet patient. Only patients who meet the PEDSnet definition of an active patient should be included in this table. The criteria for identifying an active patient are:

- Has a unique identifier AND
- At least 1 "in person" clinical encounter on or after January 1, 2009 AND
- At least 1 coded diagnoses recorded on or after January 1, 2009 AND
- Is not a test patient or a research-only patient

The definition of an "in person" clinical encounter remains heuristic -any encounter type that involves a meaningful **physical** interaction with a clinician that involved clinical content. An encounter for a telephone encounter or a lab blood draw does not meet this definition.

For reference `Visit_concept_ids` that correspond to an "in person" clinical encounter are:

Visit Type	Visit*concept*id
Inpatient Hospital Stay	9201
Ambulatory/Outpatient Visit (With a Physician)	9202
Outpatient Non Physician	2000000469
Emergency Department	9203
Long Term Care Visit	42898160
Non-Acute Institutional Stay	44814710
Emergency Department Admit to Inpatient Hospital Stay (If sites are unable to split the encounter)	2000000048
Observation Stay	2000000088

NOTE: While the 1/1/2009 date and "in person" clinical encounter restrictions apply to defining an active PEDSnet patient, once a patient has met this criteria, PEDSnet will extract *ALL* available clinical encounters/clinical data of any type across all available dates. That is, 1/1/2009 and 1 'in person' clinical encounter applies only to defining the active patient cohort. It does NOT apply to data extraction on active patients.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
person_id	Yes	Yes	Integer	A unique identifier for each person; this is created by each contributing site.	This is not a value found in the EHR. PERSON*ID must be unique for all patients within a single data set.* ***SITE RESPONSIBILITY: This field must remain a stable identifier across submissions to the DCC.*** *A mapping from the person*id to a real patient ID or MRN from the source EHR must be kept at the local site. This mapping is not shared with the data coordinating center. It is used only by the site for re-identification for study recruitment or for data quality review.
gender*concept*id	Yes	Yes	Integer	A foreign key that refers to a standard concept identifier in the Vocabulary for the gender of the person.	Please include valid concept ids (consistent with OMOP CDMv5.1). Predefined value set (valid concept*ids found in CONCEPT table select * from concept where ((domain*id='Gender' and concept*class*id='Gender')or (domain*id='Observation' and vocabulary*id='PCORNet' and concept*class*id in ('Gender','Undefined'))) and concept*code not in ('Sex-F','Sex-M') and invalid*reason is null: • Ambiguous: concept*id = 44814664* • *Female: concept*id = 8532 • Male: concept*id = 8507* • *No Information: concept*id = 44814650 (Vocabulary*id='PCORNet')* • *Unknown: concept*id = 44814653 • Other: concept_id = 44814649
gender*source*concept_id	Yes	Yes	Integer	A foreign key to the gender concept that refers to the code used in the source.	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
year*of*birth	Yes	Yes	Integer	The year of birth of the person.	For data sources with date of birth, the year is extracted. For data sources where the year of birth is not available, the approximate year of birth is derived based on any age group categorization available. Please keep all accurate/real dates (No date shifting)
month*of*birth	No	Provide When Available	Integer	The month of birth of the person.	For data sources that provide the precise date of birth, the month is extracted and stored in this field. Please keep all accurate/real dates (No date shifting)
day*of*birth	No	Provide When Available	Integer	The day of the month of birth of the person.	For data sources that provide the precise date of birth, the day is extracted and stored in this field. Please keep all accurate/real dates (No date shifting)
		Provide			Do not include timezone.

birth_datetime	No	When Available	Datetime	The birth date and time	Please keep all accurate/real dates (No date shifting). If there is no time associated with the date assert midnight.
race*concept*id	Yes	Yes	Integer	A foreign key that refers to a standard concept identifier in the Vocabulary for the race of the person.	Details of categorical definitions: • **-American Indian or Alaska Native**: A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment. • **-Asian**: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. • **-Black or African American**: A person having origins in any of the black racial groups of Africa. • **-Native Hawaiian or Other Pacific Islander**: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. • **-White**: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa. For patients with multiple races (i.e. biracial), race is considered a single concept, meaning there is only one race slot. If there are multiple races in the source system, concatenate all races into one race*source*value (see below) and use concept*id code as 'Multiple Race.'* *Predefined values (valid concept*ids found in CONCEPT table where ((domain*id='Race' and vocabulary*id = 'Race') or (vocabulary*id='PCORNet' and concept*class*id='Undefined') or concept*id in (44814659,44814660)) and invalid*reason is null:* • *American Indian/Alaska Native: concept*id = 8657 • Asian: concept*id = 8515* • *Black or African American: concept*id = 8516 • Native Hawaiian or Other Pacific Islander: concept*id = 8557* • *White: concept*id = 8527 • Multiple Race: concept*id = 44814659 (vocabulary*id='PCORNet') • Refuse to answer: concept*id = 44814660 (vocabulary*id='PCORNet') • No Information: concept*id = 44814650 vocabulary*id='PCORNet') • Unknown: concept*id = 44814653* • *Other: concept*id = 44814649
race*source*concept_id	Yes	Yes	Integer	A foreign key to the race concept that refers to the code used in the source.	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
ethnicity*concept*id	Yes	Yes	Integer	A foreign key that refers to the standard concept identifier in the Vocabulary for the ethnicity of the person.	For PEDSnet, a person with Hispanic ethnicity is defined as "A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race." Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id ='Ethnicity' or (vocabulary*id=PCORNet and concept*class*id='Undefined) where noted):* • *Hispanic: concept*id = 38003563 • Not Hispanic: concept*id = 38003564* • *No Information: concept*id = 44814650 (vocabulary*id='PCORNet')* • *Unknown: concept*id = 44814653 (vocabulary*id='PCORNet')* • *Other: concept*id = 44814649 (vocabulary_id='PCORNet')
ethnicity*source*concept_id	Yes	Yes	Integer	A foreign key to the ethnicity concept that refers to the code used in the	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**

				source.	
location_id	No	Provide When Available	Integer	A foreign key to the place of residency (ZIP code) for the person in the location table, where the detailed address information is stored.	
provider_id	No	Provide When Available	Integer	Foreign key to the primary care provider the person is seeing in the provider table.	For PEDSnet CDM v3.2.0: Sites will use site-specific logic to determine the best primary care provider and document how that decision was made (e.g., billing provider).
care*site*id	Yes	Yes	Integer	A foreign key to the site of primary care in the care_site table, where the details of the care site are stored	For patients who receive care at multiple care sites, use site-specific logic to select a care site that best represents where the patient obtains the majority of their recent care. If a specific site within the institution cannot be identified, use a care*site*id representing the institution as a whole.
pn*gestational*age	No	Provide When Available	Integer	The post-menstrual age in weeks of the person at birth, if known	Use granularity of age in weeks as is recorded in local EHR.
person*source*value	No	Provide When Available	Varchar	An encrypted key derived from the person identifier in the source data.	Insert a unique pseudo-identifier (random number, encrypted identifier) into the field. Do not insert the actual MRN or PAT*ID from your site. A mapping from the pseudo-identifier for person*source_value in this field to a real patient ID or MRN from the source EHR must be kept at the local site. This mapping is not shared with the data coordinating center. It is used only by the site for re-identification for study recruitment or for data quality review.
gender*source*value	Yes	Yes	Varchar	The source code for the gender of the person as it appears in the source data.	The person's gender is mapped to a standard gender concept in the Vocabulary; the original value is stored here for reference. See gender*concept*id
race*source*value	Yes	Yes	Varchar	The source code for the race of the person as it appears in the source data.	The person race is mapped to a standard race concept in the Vocabulary and the original value is stored here for reference. For patients with multiple races (i.e. biracial), race is considered a single concept, meaning there is only one race slot. If there are multiple races in the source system, concatenate all races into one source value, and use the concept_id for Multiple Race.
ethnicity*source*value	Yes	Yes	Varchar	The source code for the ethnicity of the person as it appears in the source data.	The person ethnicity is mapped to a standard ethnicity concept in the Vocabulary and the original code is, stored here for reference.
language*concept*id	Yes	Yes	Integer	A foreign key that refers to the standard concept identifier in the Vocabulary for the language of the person.	For PEDSNet, please map your source codes to acceptable language values in appendix 2 **If there is not a mapping for the source code in the network language mapping, use concept_id = 44814649 (Other PCORNet Vocabulary)**
language*source*concept_id	Yes	Yes	Integer	A foreign key to the language concept that refers to the code used in the source.	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**

language*source*value	Yes	Yes	Varchar	The source code for the language of the person as it appears in the source data	The person language is mapped to a standard language concept in the Vocabulary and the original code is stored here for reference.

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.2 DEATH

The death domain contains the clinical event for how and when a person dies. Living patients should not contain any information in the death table.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
death*cause*id	Yes	Yes	Integer	A unique identifier for each death cause occurrence	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
person_id	Yes	Yes	Integer	A foreign key identifier to the deceased person. The demographic details of that person are stored in the person table.	See PERSON.person_id (primary key)
death_date	Yes	Yes	Date	The date the person was deceased.	If the precise date including day or month is not known or not allowed, December is used as the default month, and the last day of the month the default day. If no date available, use date recorded as deceased. When the date of death is not present in the source data, use the date the source record was created.
death_datetime	Yes	Yes	Datetime	The date the person was deceased.	**This field is custom to PEDSnet** If the precise date including day or month is not known or not allowed, December is used as the default month, and the last day of the month the default day. If no date available, use date recorded as deceased. When the date of death is not present in the source data, use the date the source record was created. If there is no time associated with the date assert '23:59:59'.
death*type*concept_id	Yes	Yes	Integer	A foreign key referring to the predefined concept identifier in the Vocabulary reflecting how the death was represented in the source data.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id ='Death Type') select * from concept where concept*class*id ='Death Type' yields 9 valid concept*ids. If none are correct, use concept*id = 0 Note: Most current ETLs are extracting data from EHR. The common concept*id to insert here is* • *38003569 ("EHR record patient status "Deceased")* *. Please assert* • *No information: concept*id = 44814650 where there is no information in the source **Note**: These terms only describe the source from which the death was reported. It does not describe our certainty/source of the date of death, which may have been created by one of the heuristics described in death_date.
cause*concept*id	No	Provide When Available	Integer	A foreign referring to a standard concept identifier in the Vocabulary for conditions.	

cause*source*value	No	Provide When Available	Varchar	The source code for the cause of death as it appears in the source. This code is mapped to a standard concept in the Vocabulary and the original code is stored here for reference.	
cause*source*concept_id	No	Provide When Available	Integer	A foreign key to the vocabulary concept that refers to the code used in the source.	This links to the concept id of the vocabulary of the cause of death concept id as stored in the source. For example, if the cause of death is "Acute myeloid leukemia, without mention of having achieved remission" which has an icd9 code of 205.00 the cause source concept id is 44826430 which is the icd9 code concept that corresponds to the diagnosis 205.00. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
death*impute*concept_id	Yes	Yes	Varchar	A foreign key referring to a standard concept identifier in the vocabulary for death imputation.	p>Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where concept*class*id ='Death Imput Type')* *select * from concept where (concept*class*id ='Death Imput Type' or (vocabulary*id='PCORNet' and concept*class*id='Undefined')) and invalid*reason is null yields 8 valid concept*ids. If none are correct, use concept*id = 0* • *Both month and day imputed: 2000000034* • *Day imputed: 2000000035* • *Month imputed: 2000000036* • *Full Date imputed: 2000000038* • *Not imputed:2000000037* • *No Information: concept*id = 44814650 (Vocabulary*id='PCORNet')* • *Unknown: concept*id = 44814653 • Other: concept_id = 44814649

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.2.1 Additional Notes

- Each Person may have more than one record of death in the source data. It is OK to insert multiple death records for an individual.
- If the Death Date cannot be precisely determined from the data, the best approximation should be used.

1.3 LOCATION

The Location domain represents a generic way to capture physical location or address information. Locations are used to define the addresses for Persons and Care Sites. The most important field is ZIP for location-based queries.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
location_id	Yes	Yes	Integer	A unique identifier for each geographic location.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
state	No	Provide When Available	Varchar	The state field as it appears in the source data.	
zip	No	Provide When Available	Varchar	The zip code. For US addresses, valid zip codes can be 3, 5 or 9 digits long, depending on the source data.	While optional, this is the most important field in this table to support location-based queries.
location*source*value	No	Provide When Available	Varchar	The verbatim information that is used to uniquely identify the location as it appears in the source data.	If location source values are deemed sensitive by your organization, insert a pseudo-identifier (random number, encrypted identifier) into the field. Sites electing to obfuscate location*source*values will keep the mapping between the value in this field and the original clear text location source value. This value is only used for site-level re-identification for study recruitment and for data quality review. Sites may consider using the location*id field value in this table as the pseudo-identifier as long as a local mapping from location*id to the real site identifier is maintained.
address_1	No	NO	Varchar		Do not transmit to DCC
address_2	No	NO	Varchar		Do not transmit to DCC
city	No	NO	Varchar		Do not transmit to DCC
county	No	NO	Varchar		Do not transmit to DCC

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.3.2 Additional Notes

- Each address or Location is unique and is present only once in the table
- Locations in this table are restricted to locations that are applicable to persons and care_sites in the Pedsnet cohort at each site. When external data is implemented, valid(data containing) locations may be expanded beyond locations of those only present in clinical tables.

1.4 CARE_SITE

The Care Site domain contains a list of uniquely identified physical or organizational units where healthcare delivery is practiced (offices, wards, hospitals, clinics, etc.).

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
care*site*id	Yes	Yes	Integer	A unique identifier for each defined location of care within an organization. Here, an organization is defined as a collection of one or more care sites that share a single EHR database.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
care*site*name	No	Provide When Available	Varchar	The description of the care site	
					Please include valid concept ids (consistent with OMOP CDMv5.1). Predefined value set (valid concept*ids found in CONCEPT table where concept*class*id = 'Place of Service' and invalid*reason is null)

place*of*service*concept*id	No	Provide When Available	Integer	A foreign key that refers to a place of service concept identifier in the Vocabulary	select * from concept where concept*class*id = 'Place of Service' and invalid*reason is null yields 49 valid concept*ids. Please use the following value set for PEDSnet v3.2: • **Urgent Care Facility = 8782** • Rural Health Clinic = 8761 • Outpatient (Examples: Hospital Dialysis, HOD, Day Hospital, Day Medicine) = 8756 • Office =8940 • Inpatient Psychiatric Facility =8971 • Inpatient Hospital =8717 • Independent Clinic =8716 • Emergency Room - Hospital = 8870 • Other Place of Service =8844 • Other Inpatient Care =8892 • Unknown: concept*id = 44814653* • *Other: concept*id = 44814649 • No information: concept_id = 44814650
location_id	No	Provide When Available	Integer	A foreign key to the geographic location of the administrative offices of the organization in the location table, where the detailed address information is stored.	
care*site*source_value	Yes	Yes	Varchar	The identifier for the organization in the source data, stored here for reference.	If care site source values are deemed sensitive by your organization, insert a pseudo-identifier (random number, encrypted identifier) into the field. Sites electing to obfuscate care site*source*values will keep the mapping between the value in this field and the original clear text location source value. This value is only used for site-level re-identification for study recruitment and for data quality review. For EPIC EHRs, map care*site*id to Clarity Department. Sites may consider using the care*site*id field value in this table as the pseudo-identifier as long as a local mapping from care*site*id to the real site identifier is maintained.
place*of*service*source*value	No	Provide When Available	Varchar	The source code for the place of service as it appears in the source data, stored here for reference.	
specialty*concept*id	No	Provide When Available	Integer	The specialty of the department linked to a standard specialty concept as it appears in the Vocabulary	Care sites could have one or more specialties or a Care site could have no specialty information. **Valid specialty concept ids for PEDSnet are found in the appendix** **Please use the following rules:** • If care site specialty information is unavailable, please follow the convention on reporting values that are unknown,null or unavailable. • If a care site has a single specialty associated with it, sites should link the specialty to the **valid specialty concepts as assigned in the appendix**. If the specialty does not correspond to a value in this listing, please use the NUCC Listing (vocabulary*id='NUCC') provided in the vocabulary as a reference.* • *If there are multiple specialties associated with a particular care site and sites are not able to assign a specialty value on the visit occurrence level, sites should use the specialty concept id=38004477 "Pediatric Medicine".*

					• *If there are multiple specialties associated with a particular care site and this information is attainable, sites should document the strategy used to obtain this information and the strategy used to link the correct care site/specialty pair for each visit occurrence. Sites should also link the specialty to the* ***valid specialty concepts as assigned in the*** *appendix* *If the specialty does not correspond to a value in this listing, please use the NUCC Listing (vocabulary*id='NUCC') provided in the vocabulary as a reference. • If the speciality does not correspond to a value in the NUCC Listing and no value in the ABMS Listing, please use the Specialty listing (vocabulary_id='Specialty') as a reference
specialty*source*value	No	Provide When Available	Varchar	The source code for the specialty as it appears in the source data, stored here for reference.	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.4.1 Additional Notes

- Care sites are primarily identified based on the specialty or type of care provided, and secondarily on physical location, if available (e.g. North Satellite Endocrinology Clinic)
- The Place of Service Concepts are based on a catalog maintained by the CMS (see vocabulary for values)

1.5 PROVIDER

The Provider domain contains a list of uniquely identified health care providers. These are typically physicians, nurses, etc.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
provider_id	Yes	Yes	Integer	A unique identifier for each provider. Each site must maintain a map from this value to the identifier used for the provider in the source data.	This is not a value found in the EHR. **SITE RESPONSIBILITY: This field must remain a stable identifier across submissions to the DCC.** A mapping from the provider_id to a real provider from the source EHR must be kept at the local site. This mapping is not shared with the data coordinating center. It is used only by the site for re-identification for study recruitment or for data quality review. Sites should document who they have included as a provider.
provider_name	No	NO	Varchar	A description of the provider	DO NOT TRANSMIT TO DCC
gender*concept*id	No	Provide When Available	Integer	The gender of the provider	A foreign key to the concept that refers to the code used in the source.
specialty*concept*id	No	Provide When Available	Integer	A foreign key to a standard provider's specialty concept identifier in the Vocabulary.	Please map the source data to the mapped provider specialty concept associated with the American Medical Board of Specialties as seen in Appendix A1. Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Provider Specialty' and vocabulary*id in ('Specialty', 'ABMS','NUCC','PEDsnet'))* *select * from concept where domain*id ='Provider Specialty' and vocabulary*id in ('Specialty', 'ABMS','NUCC','PEDsnet') and invalid*reason is null yields 1025 valid concept*ids.* *If none are correct, use concept*id = 0 For providers with more than one specialty, use site-specific logic to select one specialty and document the logic used. For example, sites may decide to always assert the **first** specialty listed in their data source. As a first guide please use

					assert the "first" specialty listed in their data source. As a first guide please use the ABMS and PEDsnet vocabulary specialty listing listing to map your specialtity values. If the specialty does not correspond to a value in these listings, please use the NUCC Listing (vocabulary*id='NUCC') provided in the vocabulary as a reference and the Specialty (vocabulary*id='Specialty') if no correspond value exists in the NUCC Listing.
care*site*id	Yes	Yes	Integer	A foreign key to the main care site where the provider is practicing.	See CARE*SITE.care*site_id (primary key)
year*of*birth	No	Provide When Available	Integer	The year of birth of the provider	
NPI	No	Site Preference	Varchar	The National Provider Identifier (NPI) of the provider.	
DEA	No	Site Preference	Varchar	The Drug Enforcement Administration (DEA) number of the provider.	
provider*source*value	Yes	Yes	Varchar	The identifier used for the provider in the source data, stored here for reference.	Insert a pseudo-identifier (random number, encrypted identifier) into the field. Do not insert the actual PROVIDER*ID from your site. A mapping from the pseudo-identifier for provider*source*value in this field to a real provider ID from the source EHR must be kept at the local site. This mapping is not shared with the data coordinating center. It is used only by the site for re-identification for study recruitment or for data quality review. *Sites may consider using the provider*id field value in this table as the pseudo-identifier as long as a local mapping from provider_id to the real site identifier is maintained.
specialty*source*value	No	Provide When Available	Varchar	The source code for the provider specialty as it appears in the source data, stored here for reference.	Optional. May be obfuscated if deemed sensitive by local site.
specialty*source*concept_id	No	Provide When Available	Integer	A foreign key to a concept that refers to the code used in the source.	If providing this information, sites should document how they determine the specialty associated with the provider. **Valid specialty concept ids for PEDSnet are found in the appendix** If the specialty does not correspond to a value in this listing, please use the NUCC Listing (vocabulary*id='NUCC') provided in the vocabulary as a reference.* ***If there is not a mapping for the source code in the standard vocabulary, use concept*id = 0***
gender*source*value	No	Provide When Available	Varchar	The source value for the provider gender.	
gender*source*concept_id	No	Provide When Available	Integer	The gender of the provider as represented in the source that maps to a concept in the	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**

				concept in the vocabulary	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.5.1 Additional Notes

- For PEDSnet, a provider is any individual (MD, DO, NP, PA, RN, etc) who is authorized to document care.
- Providers are not duplicated in the table.

1.6 VISIT_OCCURRENCE

The visit occurrence domain contains the spans of time a person continuously receives medical services from one or more providers at a care site in a given setting within the health care system.

Exclusions:

1. Future Vists
2. Cancelled Visits (where the patient was not seen)

Note 1: Please use the following logic to assign visit concept ids:

Visit Concept Id	Concept Name	Visit Type Inclusion	In Person	Examples/Logic (includes but is not limited to)
9201	Inpatient Visit (IP)	Visits that resulted in a patient admission	Yes	Hospital Admissions
9202	Ambulatory Visit (AV)/Outpatient	In person Outpatient Visits visits where the patient was seen by a physician	Yes	Office Visits or Appointments
2000000469	Outpatient Non Physician (OP-Non Physician)	In person Outpatient Visits visits where the patient was **NOT** seen by a physician	Yes	Lab Visits, Radiology
9203	Emergency Department Visit (ED)	Emergency Department Visits and Urgent Care	Yes	Emergency Room Visits and Urgent Care
44814711	Other ambulatory Visit (OA)	Outpatient visits where the patient was not seen in person.	No	Telemedicine,Telephone, Emails, Refills and Orders Only Encounters
42898160	Long Term Care Visit	Formal or Informal long term care for chronic illness management	Yes	Site discretion
44814710	Non-Acute Institutional	Non-Acute long term management of care	Yes	Site discretion
2000000048	Emergency Department Admit to Inpatient Hospital Stay	Combination of 9203 and 9201 visits	Yes	Use only if unable to split the ED and inpatient visit.
2000000088	Observation Visit	Please discern what defines an observation visit at your site	Yes	Only map to the observation visit type if the patient leaves the hospital or is discharged from what has been determined to be an observation visit. For sites splitting visits, ED->Observation visits are only to be mapped as Observation Stay Visits. The split in this case is not required.
2000000104	Administrative Visit	Other visits that are in the source system for administrative purposes.	No	Professional Billing or Hospital Abstractions

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
					This is not a value found in the EHR.

visit*occurrence*id	Yes	Yes	Integer	A unique identifier for each person's visits or encounter at a healthcare provider.	VISIT*OCCURRENCE*ID must be unique for all patients within a single data set. **SITE RESPONSIBILITY: This field must remain a stable identifier across submissions to the DCC.** A mapping from the visit occurrence id to a real patient encounter from the source EHR must be kept at the local site. This mapping is not shared with the data coordinating center. It is used only by the site for re-identification for study recruitment or for data quality review. Do not use institutional encounter ID.
person_id	Yes	Yes	Integer	A foreign key identifier to the person for whom the visit is recorded. The demographic details of that person are stored in the person table.	
visit*start*date	Yes	Yes	Date	The start date of the visit.	No date shifting. Full date.
visit*end*date	No	Provide When Available	Date	The end date of the visit.	No date shifting. Full date. If this is a one-day visit the end date should match the start date. If the encounter is on-going at the time of ETL, this should be null.
visit*start*datetime	Yes	Yes	Datetime	The start date of the visit.	No date shifting. Full date and time. **If there is no time associated with the date assert midnight for the start time**
visit*end*datetime	No	Provide When Available	Datetime	The end date of the visit.	No date shifting. If this is a one-day visit the end date should match the start date. If the encounter is on-going at the time of ETL, this should be null. Full date and time. **If there is no time associated with the date assert 11:59:59 pm for the end time**
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who was associated with the visit.	Use attending or billing provider for this field if available, even if multiple providers were involved in the visit. Otherwise, make site-specific decision on which provider to associate with visits and document. **NOTE: this is NOT required in OMOP CDM v4, but appears in OMOP CDMv5.**
care*site*id	No	Provide When Available	Integer	A foreign key to the care site in the care site table that was visited.	See CARE*SITE.care*site_id (primary key)
visit*concept*id	Yes	Yes	Integer	A foreign key that refers to a place of service concept identifier in the vocabulary.	**In PEDSnet CDM v1, this field was previously called place*of*service*concept*id** Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where (domain*id='Visit' and ~ 'Enc
visit*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined concept identifier in the standard vocabulary reflecting the type of source data from which the visit record is derived.	select * from concept where concept*class*id='Visit Type' yields 3 valid concept*ids.* *If none are correct, user concept*id=0. The majority of visits should be type 'Visit derived from EHR record' which is concept_id=44818518
				The source code used to reflect the type or source of the visit in the source	

visit*source*value	No	Provide When Available	Varchar	data. Valid entries include office visits, hospital admissions, etc. These source codes can also be type-of service codes and activity type codes.	
visit*source*concept_id	No	Provide When Available	Integer	A foreign key to a concept that refers to the code used in the source.	If a site is using HCPS or CPT for their visit source value, the standard concept id that maps to the particular vocabulary can be used here. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
preceding*visit*occurrence_id	No	NO	Integer	A foreign key to the VISIT_OCCURRENCE table record of the visit immediately preceding this visit.	Do not transmit to DCC
admitted*from*concept_id	No	Provide When Available	Integer	A foreign key to the predefined concept in the Place of Service Vocabulary reflecting the admitting source for a visit.	Please use the following valid concept id set for Admitting source: • Adult Foster Home=44814670 • Assisted Living Facility=44814671 • Ambulatory Visit=44814672 • Emergency Department=8870= • Home Health=44814674 • Home / Self Care=44814675 • Hospice=8546 • Other Acute Inpatient Hospital=38004279 • Nursing Home (Includes ICF)=44814678 • Rehabilitation Facility=44814679 • Residential Facility=44814680 • Skilled Nursing Facility=8863 • No information=44814650 • Unknown=44814653 • Other=44814649 This should be populated for inpatient encounters in the source but may vary for emergency department (ED) visits and outpatient encounters (AV,OA).
discharge*to*concept_id	No	Provide When Available	Integer	A foreign key to the predefined concept in the Place of Service Vocabulary reflecting the discharge disposition (destination) for a visit.	Please use the following valid concept id set for Discharge Destination: • Adult Foster Home=38004205 • Assisted Living Facility=38004301 • Against Medical Advice=4021968 • Absent without leave=44814693 • Expired=4216643 • Home Health=38004195 • Home / Self Care=8536 • Hospice=8546 • Other Acute Inpatient Hospital=38004279 • Nursing Home (Includes ICF)=8676 • Rehabilitation Facility=8920 • Residential Facility=44814701 • Still In Hospital=8717 • Skilled Nursing Facility=8863 • No information=44814650 • Unknown=44814653 • Other=44814649 This should be populated for inpatient encounters in the source but may vary for emergency department (ED) visits and outpatient encounters (AV,OA).
admitted*from*source_value	No	Provide When	Varchar	The source code for the admitting source as it appears in the source	This should be populated for inpatient encounters in the source but may vary for emergency department (ED)

		Available		data.	visits and outpatient encounters (AV,OA).
discharge*to*source_value	No	Provide When Available	Varchar	The source code for the discharge disposition as it appears in the source data.	This should be populated for inpatient encounters in the source but may vary for emergency department (ED) visits and outpatient encounters (AV,OA).

**If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.6.1 Additional Notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to visit_occurrence. All visits, of all types (physical and virtual) are included for an active patient.
- A Visit Occurrence is recorded for each visit to a healthcare facility.
- **If a visit includes moving between different visit*concepts (ED -> inpatient) sites may opt to split the record into separate visit*occurrence records**.

To show the relationship of the split (ED -> inpatient) encounter, use the FACT_RELATIONSHIP table.

An example of this is below:

VISIT_OCCURRENCE

visit*occurrence*id	person_id	visit*start*date	visit*end*date	provider_id	care*site*id	place*of*service*concept*id	place*of*service*source*value
35022489	209846	2011-11-14 17:36:00-05	2011-11-14 22:25:00-05	2238	322	9203	Emergency
35022490	209846	2011-11-14 22:25:00-05	2011-11-15 16:33:00-05	2238	43	9201	Emergency

FACT_RELATIONSHIP

Domain*concept*id_1	fact*id*1	Domain*concept*id_2	fact*id*2	relationship*concept*id
Visit	35022489	Visit	35022490	Occurs before
Visit	35022490	Visit	35022489	Occurs after

Because the domain*concept*id and relationship*concept*id are actually numeric values the following is an example of how the table is stored:

Domain*concept*id_1	fact*id*1	Domain*concept*id_2	fact*id*2	relationship*concept*id
8	35022489	8	35022490	44818881
8	35022490	8	35022489	44818783

- Operating and Anesthesia encounters that occur as apart of the Inpatient stay should be rolled up into one Inpatient encounter.
- Each Visit is standardized by assigning a corresponding Concept Identifier based on the type of facility visited and the type of services rendered.
- At any one day, there could be more than one visit.
- One visit may involve multiple attending or billing providers (e.g. billing, attending, etc), in which case the ETL must specify how a single provider id is selected or leave the provider_id field null.
- One visit may involve multiple care sites, in which case the ETL must specify how a single care*site id is selected or leave the care*site_id field null.

1.7 CONDITION_OCCURRENCE

The condition occurrence domain captures records of a disease or a medical condition based on diagnoses, signs and/or symptoms observed by a provider or reported by a patient.

Conditions are recorded in different sources and levels of standardization. For example:

- Medical claims data include ICD-9-CM diagnosis codes that are submitted as part of a claim for health services and procedures.
- EHRs may capture a person's conditions in the form of diagnosis codes and symptoms as ICD-9-CM or ICD-10-CM codes, but may not have a way to capture out-of-system conditions.
- EHRs may also capture External Injury codes in different place in the source system. These types of codes are also to be included.

For the PEDSNet network, please provide **clinical physician based diagnosis** as opposed to billing or claim based diangosis data.

Note 1: For the PEDSNet network, we are coding all diagnosis codes to the SNOMED-CT Vocabulary. Research has showed that the IMO to SNOMED native mapping and IMO to ICD to SNOMED OMOP mapping produces highly variable results. For a particular IMO Code, when comparing the two mapping options, the same SNOMED concept id is only produced

25% of the time. See below examples of the mapping differences (IMO-SNOMED, ICD10 and ICD9):

IMO Description	Direct SNOMED	Via ICD
Numbness of Toes	Numbness of toe	Altered Sensation of Skin
Cerebellar ataxia/dyskinesia	Cerebellar Disorder	Cerebellar Ataxia
Choking episode	Choking sensation	Finding of head and neck region
Intestional malrotation	Congenital malrotation of intestine	Congenital anomaly of fixation of intestine
Genetic disease carrier status testing	Genetic finding	Genetic disorder carrier
Duchenne muscular dystrophy	Duchenne muscular dystrophy	Hereditary progressive muscular dystrophy

For diagnosis codes, please provide the IMO to SNOMED mapping where it exists in the source system.

If the IMO to SNOMED mapping is not available in the system, utilize the IMO to ICD to SNOMED OMOP mapping in the vocabulary.

Please use the following logic to populate the `condition_concept_id`, `condition_source_concept_id` and `condition_source_value` based on what is available in your source system:

You have in your source system	condition*concept*id	condition*source*concept_id	condition*source*value
Any diagnosis that was captured as a term or name (e.g. IMO to SNOMED)	Corresponding SNOMED concept id	Corresponding concept for site diagnosis captured (must correspond to ICD9/ICD10 concept mapping)	Diagnosis Name "|" IMO Code "|" Diagnosis Code
Any diagnosis that was captured directly as a code (e.g. ICD9/10) by a coder	Corresponding SNOMED concept id	Corresponding concept for site diagnosis code (must correspond to ICD9/ICD10 concept mapping)	Diagnosis Name "|" IMO Code "|" Diagnosis Code

Note 2: For the PEDSNet network, please provide clinical physician based diagnosis as opposed to billing or claim based diangosis data. The clinical physician based diagnosis corresponds to the "Order origin" concept ids for `condition_type_concept_id`. If you are providing billing or claim diagnosis data, please use the "Billing" or "Claim" concept_ids for `condition_type_concept_id`.

Use the following logic to determine the correct `condition_type_concept_id` as it pertains to the visit the diagnosis stems from:

Visit*concept*id	Condition*type*concept_id
9201 (Inpatient)	Inpatient header
9202 (Outpatient)	Outpatient header
9203 (Emergency)	Emergency header
2000000048 (ED to Inpatient)	Inpatient header
2000000088 (Observation)	Inpatient header

Note 3: We have been made aware that there are a significant amount of conditions that route to a domain of Procedure, Measurement etc. Please **DO NOT** route these conditions to those domains or tables (i.e. Procedure*Occurrence, Measurement). Instead, include all records coming out of our source tables for diagnosis data in the Condition*Cccurrence table.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
condition*occurrence*id	Yes	Yes	Integer	A unique identifier for each condition occurrence event.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
person_id	Yes	Yes	Integer	A foreign key identifier to the person who is experiencing the condition. The demographic details of that person are stored in the person table.	
condition*concept*id	Yes	Yes	Integer	A foreign key that refers to a standard condition concept identifier in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id ='SNOMED') select * from concept where vocabulary*id ='SNOMED' yields ~440,000 valid concept*ids. If none are correct, use concept_id = 0

condition*start*date	Yes	Yes	Date	The date when the instance of the condition is recorded.	No date shifting.
condition*end*date	No	Provide When Available	Date	The date when the instance of the condition is considered to have ended	No date shifting. If this information is not available, set to NULL.
condition*start*datetime	Yes	Yes	Datetime	The date and time when the instance of the condition is recorded.	No date shifting. Full date and time. **If there is no time associated with the date assert midnight for the start time**
condition*end*datetime	No	Provide When Available	Datetime	The date and time when the instance of the condition is considered to have ended	No date shifting. If this information is not available, set to NULL. Full date and time. **If there is no time associated with the date assert 11:59:59 pm for the end time**
condition*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined concept identifier in the Vocabulary reflecting the source data from which the condition was recorded, the level of standardization, and the type of occurrence. For example, conditions may be defined as primary or secondary diagnoses, problem lists and person statuses.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where concept*class*id ='Condition Type' and vocabulary*id='PEDSnet') select * from concept where concept*class*id ='Condition Type' and vocabulary*id='PEDSnet' yields 21 valid concept*ids. If none are correct, use concept_id = 0 **For the primary diagnosis for the inpatient, outpatient or emergency setting (may be identified as Dx#1 in a source system), Please use concepts the following concepts:** • Outpatient header - 1st position - Order Origin=2000000095 • Outpatient header - 1st position - Billing Origin=2000000096 • Outpatient header - 1st position - Claim Origin=2000000097 • Inpatient header - primary - Order Origin=2000000092 • Inpatient header - primary - Billing Origin =2000000093 • Inpatient header - primary - Claim Origin= 2000000094 • Emergency Header - 1st Position - Order Origin=2000001280 • Emergency Header - 1st Position - Claim Origin=2000001281 • Emergency Header - 1st Position - Billing Origin=2000001282 **All other diagnosis that is not the primary (or Dx#1) in the inpatient, outpatient or emergency setting should correspond to the following concept ids:** • Inpatient header - 2nd position - Order Origin=2000000098 • Inpatient header - 2nd position - Billing Origin = 2000000099 • Inpatient header - 2nd position - Claim Origin = 2000000100 • Outpatient header - 2nd position - Order Origin=2000000101 • Outpatient header - 2nd position - Billing Origin =2000000102

					• Outpatient header - 2nd position - Claim Origin =2000000103 • Emergency Header - 2nd Position - Order Origin=2000001283 • Emergency Header - 2nd Position - Claim Origin=2000001284 • Emergency Header - 2nd Position - Billing Origin=2000001285 **For diagnosis from the problem list, please use the following concept ids:** • EHR problem list entry - Order Origin = 2000000089 • EHR problem list entry - Billing Origin =2000000090 • EHR problem list entry - Claim Origin =2000000091 **SEE NOTE 2 for further guidance on determining the origin**
stop_reason	No	Provide When Available	Varchar	The reason, if available, that the condition was no longer recorded, as indicated in the source data.	Valid values include discharged, resolved, etc. Note that a stop_reason does not necessarily imply that the condition is no longer occurring, and therefore does not mandate that the end date be assigned.
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who was responsible for determining (diagnosing) the condition.	**In PEDSnet CDM v1, this field was previously called associated*provider*id** Any valid provider_id allowed (see definition of providers in PROVIDER table) Make a best-guess and document method used. Or leave blank
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit in the visit table during which the condition was determined (diagnosed).	
condition*source*value	Yes	Yes	Varchar	The source code for the condition as it appears in the source data. This code is mapped to a standard condition concept in the Vocabulary and the original code is, stored here for reference.	Condition source codes are typically ICD-9-CM or ICD-10-CM diagnosis codes from medical claims or discharge status/visit diagnosis codes from EHRs. Use source*to*concept maps to translation from source codes to OMOP concept_ids. **Please include the diagnosis name and source code when populating this field, by using the pipe delimiter "|" when concatenating values.** Example: Diagnosis Name "|" IMO Code "|" Diagnosis Code
condition*source*concept_id	No	Provide When Available	Integer	A foreign key to a condition concept that refers to the code used in the source	As a standard convention this code must correspond to the ICD9/ICD10 concept mapping of the source value only. For example, if the condition is "Acute myeloid leukemia, without mention of having achieved remission" which has an icd9 code of 205.00 the condition source concept id is 44826430 which is the icd9 code concept that corresponds to the diagnosis 205.00. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
condition*status*concept_id	No	Optional	Integer	A foreign key to the predefined concept in the standard vocabulary reflecting the condition status.	For PEDSnet v3.2 we are only reporting final diagnosis, please use the following concept id: • Final Diagnosis=4230359
condition*status*source_value	No	Optional	Varchar	The source code for the condition status as it appears in the source data.	
					For Pedsnet CDM v3.2, please use the following:

poa*concept*id	No	Optional	Integer	A foreign key to value in the source for that determines if the diagnosis is present on admission	• Yes=4188539 • No=4188540 • No Information: concept*id = 44814650* • *Unknown: concept*id = 44814653 • Other: concept*id = 44814649* *If none are correct, use concept*id = 0.

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.7.1 Additional Notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to condition*occurrence. All conditions are included for an active patient. For PEDSnet CDM v3.2, we limit condition*occurrences to final diagnoses only (not reason-for-visit and provisional surgical diagnoses such as those recored in EPIC OPTIME). In EPIC, final diagnoses includes both encounter diagnoses and billing diagnoses, problem lists (all problems, not filtered on "chronic" versus "provisional" unless local practices use this flag as intended). Medical History diagnosis are optional.
- Condition records are inferred from diagnostic codes recorded in the source data by a clinician or abstractionist for a specific visit. In the current version of the CDM, diagnoses extracted from unstructured data (such as notes) are not included.
- Source code systems, like ICD-9-CM, ICD-10-CM, etc., provide coverage of conditions. However, if the code does not define a condition, but rather is an observation or a procedure, then such information is not stored in the CONDITION*OCCURRENCE table, but in the respective tables instead. An example are ICD-9-CM procedure codes. For example, OMOP source-to-concept table uses the MAPPING*TYPE column to distinguish ICD9 codes that represent procedures rather than conditions.
- Condition source values are mapped to standard concepts for conditions in the Vocabulary. For mapping ICD9 Codes to SNOMED, use the concept*relationship table where the icd9*code = concept*id*1 and relationship*id='Maps to'. Concept*id*2 will be the SNOMED concept*id mapping you need to populate the condition*concept*id.
- When the source code cannot be translated into a Standard Concept, a CONDITION*OCCURRENCE entry is stored with only the corresponding source*value and a condition*concept*id of 0.
- Codes written in the process of establishing the diagnosis, such as "question of" of and "rule out", are not represented here.

1.8 PROCEDURE_OCCURRENCE

The procedure occurrence domain contains records of significant activities or processes ordered by and/or carried out by a healthcare provider on the patient to have a diagnostic and/or therapeutic purpose that are not fully captured in another table (e.g. drug_exposure).

Procedures records are extracted from structured data in Electronic Health Records that capture source procedure codes using CPT-4, ICD-9-CM (Procedures),ICD-10 (Procedures), HCPCS or OPCS-4 procedures as orders.

More specifically the procedure occurrence domain is intended to stores information about activity or processes involving a patient that has a billable code. This includes but is not limited to the following: - LOS Codes ((Eg. 99123) This code may not Not necessarily be a CPT and could require local mapping) - Lab Procedures (including a Lab Panel Order and Culture Orders) - Surgery Procedures - Imaging Procedures - Ancilliary Therapies (Speech, Physical, Occupational etc)

Notes: **Only instantiated procedures are included in this table. Please exclude cancelled procedures For CPT Codes, only include codes that are included in the standard CPT4 vocabulary from the distributed vocabulary**

Note 1: Please use the following logic to populate the `procedure_concept_id` , `procedure_source_concept_id` and `procedure_source_value` based on what is available in your source system:

Site Information	procedure*concept*id	procedure*source*concept_id	procedure*source*value
Procedure codes using CPT-4, ICD-9-CM (Procedures),ICD-10 (Procedures), HCPCS or OPCS-4 procedures as orders	Corresponding CPT-4, ICD-9-CM (Procedures),ICD-10 (Procedures), HCPCS or OPCS-4 concept id	Corresponding CPT-4, ICD-9-CM (Procedures),ICD-10 (Procedures), HCPCS or OPCS-4 concept id	Procedure Name I Procedure Source Code
Custom Procedure Coding (That a site has knowledge of corresponding to a standard code but requires manual mapping)	Corresponding CPT-4, ICD-9-CM (Procedures),ICD-10 (Procedures), HCPCS or OPCS-4 concept id	0	Procedure Name I Custom Procedure Code

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
procedure*occurrence*id	Yes	Yes	Integer	A system-generated unique identifier for each procedure occurrence	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
				A foreign key identifier to the	

person_id	Yes	Yes	Integer	person who is subjected to the procedure. The demographic details of that person are stored in the person table.	
procedure*concept*id	Yes	Yes	Integer	A foreign key that refers to a standard procedure concept identifier in the Vocabulary.	Valid Procedure Concepts belong to the "Procedure" domain. Procedure Concepts are based on a variety of vocabularies: SNOMED-CT (vocabulary*id ='SNOMED'), ICD-9-Procedures (vocabulary*id ='ICD9Proc'),ICD-10-Procedures (vocabulary*id ='ICD10PCS'* ***NOT YET AVAILABLE****), CPT-4 (vocabulary*id ='CPT4'), and HCPCS (vocabulary_id ='HCPCS') Procedures are expected to be carried out within one day. If they stretch over a number of days, such as artificial respiration, usually only the initiation is reported as a procedure (CPT-4 "Intubation, endotracheal, emergency procedure"). Procedures could involve the administration of a drug, in which case the procedure is recorded in the procedure table and simultaneously the administered drug in the drug table.
modifier*concept*id	No	Provide When Available	Integer	A foreign key to a standard concept identifier for a modifier to the procedure (e.g. bilateral)	Valid Modifier Concepts belong to the "Modifier" concept class. select /* from concept where concept*class*id like '%Modifier%'.
quantity	No	Provide When Available	Float	The quantity of procedures ordered or administered.	
procedure_date	Yes	Yes	Date	The date on which the procedure was performed.	
procedure_datetime	Yes	Yes	Datetime	The date and time on which the procedure was performed. If there is no time associated with the date assert midnight.	**This field is a custom PEDSnet field**
procedure*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined concept identifier in the Vocabulary reflecting the type of source data from which the procedure record is derived. (OMOP vocabulary_id = 'Procedure Type')	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id = 'Procedure Type') select * from concept where vocabulary*id ='Procedure Type' yields 93 valid concept*ids. For procedures coming from billing records please map to the following concepts: • Primary Procedure: 44786630 • Secondary Procedure: 44786631 If you are unable to distinguish between primary and secondary procedures. Please map to the following: • Secondary Procedure: 44786631 For procedures coming from physician orders and all other types, please map to the following: • EHR order list entry: 38000275
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who was responsible for carrying out the procedure.	Any valid provider_id allowed (see definition of providers in PROVIDER table) Document how selection was made.
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit in the visit table during which the procedure was carried out.	See VISIT.visit*occurrence*id (primary key)

procedure*source*value	Yes	Yes	Varchar	The source code for the procedure as it appears in the source data. This code is mapped to a standard procedure concept in the Vocabulary and the original code is stored here for reference.	Procedure*source*value codes are typically ICD-9, ICD-10 Proc, CPT-4, HCPCS, or OPCS-4 codes. All of these codes are acceptable source values.Please also include the procedure name. See Note 1.
procedure*source*concept_id	No	Provide When Available	Integer	A foreign key to a procedure concept that refers to the code used in the source.	For example, if the procedure is "Anesthesia for procedures on eye; lens surgery" in the source which has a concept code in the vocabulary that is 2100658. The procedure source concept id will be 2100658. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
modifier*source*value	No	Provide When Available	Varchar	The source code for the modifier as it appears in the source data.	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.8.1 Additional notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to procedure*occurrence. All procedures are included for an active patient. For PEDSnet CDM v3.2, we limit procedures*occurrences to billing procedures only (not surgical diagnoses).
- Procedure Concepts are based on a variety of vocabularies: SNOMED-CT, ICD-9-Proc, ICD-10-Proc, CPT-4, HCPCS and OPCS-4.
- Procedures could reflect the administration of a drug, in which case the procedure is recorded in the procedure table and simultaneously the administered drug in the drug table.
- The Visit during which the procedure was performed is recorded through a reference to the VISIT_OCCURRENCE table. This information is not always available.
- The Provider carrying out the procedure is recorded through a reference to the PROVIDER table. This information is not always available.

1.9 OBSERVATION

The observation domain captures clinical facts about a patient obtained in the context of examination, questioning or a procedure. The observation domain supports capture of data not represented by other domains such as unstructured measurements. For the PEDSnet CDM version 3.2, the observations listed below are extracted from source data. Please assign the specific concept*ids listed in the table below to these observations as observation*concept*ids. Non-standard PCORnet concepts require concepts that have been entered into an OMOP-generated vocabulary (OMOP provided vocabulary*id ='PCORNet').

NOTE: DRG and DRG Type require special logic/processing described below.

- Discharge status (Inpatient and outpatient visit types where available)
- DRG (requires special logic - see Note 1 below)
- Tobacco Information (see Note 4)

Use the following table to populate observation*concept*ids for the observations listed above. The vocabulary id 'PCORNet' contains concept specific to PCORNet requirements and standards.

Table 1: Valid Observation concept IDs and Value as concept IDs for PEDSNet v3.2.

Concept Name	Observation concept ID	Vocab ID	Value as concept ID	Concept description	Vocab ID	PCORNet Mapping
Discharge status(See Note 3)	44813951	SNOMED	4161979	Discharged alive		
Discharge status	44813951	SNOMED	4216643	Expired		
Discharge status	44813951	SNOMED	44814650	No information	PCORNet	
Discharge status	44813951	SNOMED	44814653	Unknown	PCORNet	
Discharge status	44813951	SNOMED	44814649	Other	PCORNet	
Tobacco	4005823		4005823	Tobacco User		01 = Current user
Tobacco	4005823		45765920	Never used Tobacco		02 = Never

Tobacco	4005823		45765917	Ex-tobacco user		03 = Quit/Former Smoker
Tobacco	4005823		4030580	Non-smoker's second hand smoke syndrome		04 = Passive or environmental exposure
Tobacco	4005823		2000000040			06 = Not asked
Tobacco	4005823		44814650	No information	PCORNet	NI
Tobacco	4005823		44814653	Unknown	PCORNet	OT
Tobacco	4005823		44814649	Other	PCORNet	UN
Tobacco Type	4219336	Multiple Response allowed	4298794	Smoker		01 = Smoked tobacco only
Tobacco Type	4219336	Multiple Response allowed	4224317	Pipe smoking tobacco		01 = Smoked tobacco only
Tobacco Type	4219336	Multiple Response allowed	4282779	Cigarette smoking tobacco		01 = Smoked tobacco only
Tobacco Type	4219336	Multiple Response allowed	4132133	Cigar smoking tobacco		01 = Smoked tobacco only
Tobacco Type	4219336	Multiple Response allowed	4218197	Snuff tobacco		02 = Non-smoked tobacco only
Tobacco Type	4219336	Multiple Response allowed	4219234	Chewing tobacco		02 = Non-smoked tobacco only
Tobacco Type	4219336		45765920	Never used tobacco		04 = None
Tobacco Type	4219336		45765917	Ex tobacco user		04 = None
Tobacco Type	4219336		4030580	Non-smoker's second hand smoke syndrome		04 = Passive or environmental exposure/None
Tobacco Type	4219336		44814650	No information	PCORNet	NI
Tobacco Type	4219336		44814653	Unknown	PCORNet	OT
Tobacco Type	4219336		44814649	Other	PCORNet	UN
Smoking	4275495		42709996	Smokes tobacco daily		01 = Current everyday smoker
Smoking	4275495		2000000039	Occasional tobacco smoker - SNOMED International Code	PEDSNet	02 = current some day smoker
Smoking	4275495		4310250	Ex-smoker		03 = Former smoker
Smoking	4275495		4144272	Never smoked tobacco		04 = Never smoker
Smoking	4275495		4298794	Smoker		05 = Smoker, current status unknown
Smoking	4275495		4141786	Tobacco smoking consumption(status) unknown		06 = Unknown if ever smoked
Smoking	4275495	**USE AS DEFAULT FOR CATEGORY**	4044778	Chain smoker		07 = Heavy tobacco smoker
Smoking	4275495		4209006	Heavy smoker (over 20 per day)		07 = Heavy tobacco smoker
Smoking	4275495	**USE ONLY IF QUANTITY OF CIGARETTES IS KNOWN**	4209585	Moderate smoker (20 or less per day)		08 = Light tobacco smoker
Smoking	4275495		44814650	No information	PCORNet	NI

Smoking	4275495		44814653	Unknown	PCORNet	OT
Smoking	4275495		44814649	Other	PCORNet	UN
Delivery Mode (see note 5)	40760190	SNOMED	4192676	Born by cesarean section	SNOMED	
Delivery Mode	40760190	SNOMED	4212794	Born by elective cesarean section	SNOMED	
Delivery Mode	40760190	SNOMED	4250010	Born by emergency cesarean section	SNOMED	
Delivery Mode	40760190	SNOMED	4216797	Born by normal vaginal delivery	SNOMED	
Delivery Mode	40760190	SNOMED	4217586	Born by forceps delivery	SNOMED	
Delivery Mode	40760190	SNOMED	4236293	Born by ventouse delivery	SNOMED	
Delivery Mode	40760190	SNOMED	4250009	Born by breech delivery	SNOMED	

Note 1: For DRG, use the following logic (must use vocabulary version 5):

- The DRG value must be three digits as text. Put into value*as*string in observation
- For all DRGs, set observation*concept*id = 3040464 (hospital discharge DRG)
- To obtain correct value*as*concept_id for the DRG:
    - If the date for the DRG < 10/1/2007, use concept*class*id = "DRG", invalid*date = "9/30/2007", invalid*reason = 'D' and the DRG value=CONCEPT.concept*code to query the CONCEPT table for correct concept*id to use as value*as*concept_id.
    - If the date for the DRG >=10/1/2007, use concept*class*id = "MS-DRG", invalid*reason = NULL and the DRG value = CONCEPT.concept*code to query the CONCEPT table for the correct concept*id to use as value*as*concept*id.
- If your site has **APR-DRGs** please include these in the observation table. We have requested the APR-DRG vocabulary to be incorporated as apart of the OMOP standard vocabulary.
- Please use the following in the qualifier*concept*id:
    - Primary/Principal: concept*id = 4269228*
    - *Secondary: concept*id = 4093903

  If you are unable to distinguish between primary and secondary DRG type. Please map to the following:

    - Secondary: concept*id = 4093903*

  *If none are correct, use concept*id = 0.

Note 2: - For each inpatient encounter or in some cases the outpatient encounter, there can be 1 discharge status and 1 or more DRG (May not be 1:1 if patients still admitted (therefore no discharge disposition, discharge details or DRG yet)) - There should **NOT** be discharges without admission.

Note 3: Please provide tobacco information from the primary source of data capture at your site. If tobacco information is available at the visit level, please provide this information. If it is not, sites are welcomed to make a high level assertion about tobacco use and tobacco type information for individuals in the cohort.

Note 4: Below are examples of how the observation table and the fact relationship table would be populated for tobacco, smoking and tobacco type scenarios. In the case where tobacco information is recorded at a visit but there is missing information for tobacco, smoking or tobacco type please assert. The PEDSnet standard relationship concept id for linking tobacco items will be *0*. This concept id was chosen as there was not a specific concept id that exists in the standard vocabulary that adequately defined an appropriate relationship for linking the tobacco items.

Example 1:

Patient 1 smokes 5 cigarettes per day and does not use non-smoked tobacco

Observation table:

Observation ID	Person ID	Observation concept id	Value as concept id
0001	1	4005823	4005823
0002	1	4219336	4282779
0003	1	4275495	4209585

Fact relationship:

Domain*concept*id_1	Fact*id*1	Domain*concept*id_2	Fact*id*2	relationship*concept*id
27	0001	27	0002	0
27	0001	27	0003	0

Example 2: Patient 2 smokes 25-40 cigarettes per day and also chews tobacco

Observation table:

Observation ID	Person ID	Observation concept id	Value as concept id
0004	2	4005823	4005823
0005	2	4219336	4282779
0006	2	4219336	4219234
0007	2	4275495	4209006

Fact relationship:

Domain*concept*id_1	Fact*id*1	Domain*concept*id_2	Fact*id*2	relationship*concept*id
27	0004	27	0005	0
27	0004	27	0006	0
27	0004	27	0007	0

For more examples, or if you have a specific scenario that you have a question about, please contact the DCC.

Note 5: - For delivery mode, if you are unable to discern between elective (concept*id = 4212794) and emergency (concept*id = 4250010) cesarean, please default to the born by cesarean section (concept_id = 4192676).

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
observation_id	Yes	Yes	Integer	A unique identifier for each observation.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
person_id	Yes	Yes	Integer	A foreign key identifier to the person about whom the observation was recorded. The demographic details of that person are stored in the person table.	
observation*concept*id	Yes	Yes	Integer	A foreign key to the standard observation concept identifier in the Vocabulary.	Lab results and vitals are not stored in this table in V5 but are stored in the Measurement table.
observation_date	Yes	Yes	Date	The date of the observation.	No date shifting. Full date and time. If there is no time associated with the date assert midnight.
observation_datetime	No	Provide When Available	Datetime	The time of the observation.	No date shifting. Full date and time. If there is no time associated with the date assert midnight.
observation*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined concept identifier in the Vocabulary reflecting the type of the observation.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id ='Observation Type') select * from concept where vocabulary*id = 'Observation Type' yields 11 valid concept*ids. FOR PEDSnet CDM v3.2, all of our observations are coming from electronic health records so *set this field to concept_id = 38000280* (observation recorded from EMR). When we get data from patients, we will include

					the concept_id = 44814721
value*as*number	No (see convention)	Provide When Available	Float	The observation result stored as a number. This is applicable to observations where the result is expressed as a numeric value.	Value must be represented as at least one of {value*as*number, value*as*string or values*as*concept*id}. There are a few exceptions in vocabulary id PCORNet where all three value*as_* fields are NULL.
value*as*string	No (see convention)	Provide When Available	Varchar	The observation result stored as a string. This is applicable to observations where the result is expressed as verbatim text.	Value must be represented as at least one of {value*as*number, value*as*string or values*as*concept*id}. There are a few exceptions in vocabulary id PCORNet where all three value*as_* fields are NULL.
value*as*concept_id	No (see convention)	Provide When Available	Integer	A foreign key to an observation result stored as a concept identifier. This is applicable to observations where the result can be expressed as a standard concept from the Vocabulary (e.g., positive/negative, present/absent, low/high, etc.).	Value must be represented as at least one of {value*as*number, value*as*string or values*as*concept*id}. There are a few exceptions in vocabulary id PCORNet where all three value*as_* fields are NULL.
qualifier*concept*id	No	Provide When Available	Integer	A foreign key to standard concept identifier for a qualifier (e.g severity of drug-drug interaction alert)	Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Observation' and concept*class*id ='Qualifier Value') select * from concept where domain*id='Observation' and concept*class*id ='Qualifier Value' yields 10496 valid concept*ids. For **DRG VALUES**, please use the following: • Primary/Principal: concept*id = 4269228* • *Secondary: concept*id = 4093903 If you are unable to distinguish between primary and secondary DRG type. Please map to the following: • Secondary: concept*id = 4093903* *If none are correct, use concept*id = 0.
unit*concept*id	No	Provide When Available	Integer	A foreign key to a standard concept identifier of observation units in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Unit' and vocabulary*id ='UCUM')* *select * from concept where domain*id='Unit' and vocabulary*id ='UCUM' yields 971 valid concept*ids. If none are correct, use concept_id = 0.
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who was responsible for making the observation.	
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit in the visit table during which the observation was recorded.	
observation*source*value	No	Provide When Available	Varchar	The observation code as it appears in the source data. This code is mapped to a standard concept in the Vocabulary and the original code is, stored here for reference.	
observation*source*concept_id	No	Provide When	Integer	A foreign key to a concept that refers to the code used in the source.	**If there is not a mapping for the source code in the standard vocabulary, use concept_id =**

		Available			**0**
unit*source*value	No	Provide When Available	Integer	The source code for the unit as it appears in the source data. This code is mapped to a standard unit concept in the Vocabulary and the original code is, stored here for reference.	
qualifier*source*value	No	Provide When Available	Varchar	The source value associated with a qualifier to characterize the observation	For DRG Values, please populate information pertaining to "Primary" or "Secondary" DRG Status as it corresponds to the concept id value at your site.

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.9.1 Additional Notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to observations. All observations are included for an active patient. For PEDSnet CDM v3.2, we limit observations to only those that appear in Table 1.
- Observations have a value represented by one of a concept ID, a string, **OR** a numeric value.
- The Visit during which the observation was made is recorded through a reference to the VISIT_OCCURRENCE table. This information is not always available.
- The Provider making the observation is recorded through a reference to the PROVIDER table. This information is not always available.
- Observations obtained using standardized methods (e.g. laboratory assays) that produce discrete results are recorded by preference in the MEASUREMENT table.

1.10 OBSERVATION PERIOD

The observation period domain is designed to capture the time intervals in which data are being recorded for the person. An observation period is the span of time when a person is expected to have a clinical fact represented in the PEDSNet version 3.2 data model. This table is used to generate the PCORnet CDM enrollment table.

While analytic methods can be used to calculate gaps in observation periods that will generate multiple records (observation periods) per person, for PEDSnet, the logic has been simplified to generate a single observation period row for each patient. This logic can be found here

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Observation*period*id	Yes	Yes	Integer	A system-generate unique identifier for each observation period	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
person_id	Yes	Yes	Integer	A foreign key identifier to the person who is experiencing the condition. The demographic details of that person are stored in the person table.	
Observation*period*start_date	Yes	Yes	Date	The start date of the observation period for which data are available from the data source	Use the earliest clinical fact date available for this patient. No date shifting.
Observation*period*end_date	Yes	Yes	Date	The end date of the observation period for which data are available from the source.	Use the latest clinical fact date available for this patient. If there exists one or more records in the DEATH table for this patient, use the latest date recorded in that table.
Observation*period*start_time	Yes	Yes	Datetime	The start date of the observation period for which data are available from the data source	Use the earliest clinical fact time available for this patient. No date shifting. Full date and time. **If there is no time associated with the date assert midnight for the start time**
Observation*period*end_time	Yes	Yes	Datetime	The end date of the observation period for which data are available from the source.	Use the latest clinical fact time available for this patient. If there exists one or more records in the DEATH table for this patient, use the latest date recorded in that table. For patients who are still in the hospital or ED or other facility at the time of data extraction, leave this field NULL. Full date and time. **If there is no time associated with the date assert 11:59:59 pm for the end time**
period*type*concept_id	Yes	Yes	Integer	A unique identifier for each observation period.	
person_id	Yes	Yes	Integer	A foreign key identifier to the person for whom the observation period is defined. The demographic details of that person are stored in the person table.	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.10.1 Additional Notes

- Because the 1/1/2009 date limitation for "active patients" is not used to limit visit*occurrence, the start*date of an observation period for an active PEDSnet patient may be prior to 1/1/2009.

1.11 DRUG EXPOSURE

The drug exposure domain captures any biochemical substance that is introduced in any way to a patient. This can be evidence of prescribed, over the counter, administered (IV, intramuscular, etc), immunizations or dispensed medications. These events could be linked to procedures or encounters where they are administered or associated as a result of the encounter.

EHRs may store medications in different vocabularies (GPI,NDC etc).

Exclusions:

1. Cancelled Medication Orders
2. Missed Medication administrations

Note 1: The `effective_drug_dose` is the dose basis.(E.g. 45 mg/kg/dose). This is the discrete dose value from the source data if available. If the discrete dose value is **not** available from the source data, then compute the dose basis by looking for a weight observation **+/- 60 days of the date of the medication**. (E.g. Total Amount/**(divided by)**Weight) (Dose per kg)

The dose*unit*concept_id is the unit of the effective dose.

Please use the following logic to populate the effective_dose and dose unit based on what is available in your source system:

Site Information	Effective Drug Dose	Dose Unit Concept Id	Dose Unit Source Value
Pre-calculated effective dose available (E.g. 90 mg/kg)	90	Corresponding concept for unit (E.g. mg/kg = 9562)	mg/kg
Site is able to compute effective dose (E.g. Dose 500 mg and Available Weight +/- 60 days is 54.43 kg)	9.18	Corresponding concept for unit (E.g. mg/kg = 9562)	mg
Site is not able to compute effective dose(E.g. Site Only has dose (E.g. 450 mg))	450	Corresponding Concept for unit (E.g. mg = 8576)	mg
No discrete dosing information		0	

Note 2: The quantity is the actual dose given. (E.g. 450 mg for 10 kg patient) Extract numbers as much as possible , full value should be a part of the xml sig field.

Note 3: For dispensing records, compute the dose basis by looking for a weight observation +/- 60 days of the dispensed date.

Note 4: For the sig, encode the value using XML.

- Element 1: Actual SIG from source data
- Element 2: Raw "Supply/Quantity" (Examples: "1 bottle" "10 ml Bottle" "1 pack"
- Element 3: Refills

```
<XML>
<SIG>1/2 capful in 4 oz clear liquid</SIG>
<QUANTITY>1 jar</QUANTITY>
<REFILLS>2</REFILLS>
</XML>
```

Note 5: If there are multiple RxNorm mappings associate with a mapping, choose the mapping in the following order and stop when you find your first match.

1. BPCK (Branded Pack)
2. GPCK (Clinical Pack)
3. SBD (Branded Drug, Quant Branded Drug)
4. SCD (Clinical Drug, Quant Clinical Drug)
5. SBDF (Branded Drug Form)
6. SCDF (Clinical Drug Form)
7. MIN (Ingredient)
8. SBDC
9. SCDC
10. PIN (Ingredient)
11. IN (Ingredient)

Note 6: Please use the following table as a guide to determine how to populate the `drug_source_value` , `drug_source_concept_id` and `drug_concept_id` for Drug Exposure Values

You have in your source system	Drug*source*value	Drug*source*conept_id	Drug*concept*id
Drug code is GPI/Multum/Other code	• GPI/Multum/Other Code • Local name I GPI/Multum/Other (any above are OK)	OMOP's concept_id for GPI/Multum/Other code	RxNorm code that corresponds to a mapping from `concept_relationship`
Drug code is RxNorm	• RxNorm Code • Local name or • Local name I RxNorm code (any above are OK)	Corresponding RxNorm concept_id mapping	Corresponding RxNorm concept_id mapping

Note 7: For medication administration events, please store all events as single drug exposure entries.

Note 8: Please make an effort to include the inpatient medication order in the drug*exposure table and **if** able to please link these orders using the fact relationship table. Below is an example of how to do so: Example: Person*id = 12345 during their inpatient stay (visit*occurrence*id = 678910) had a medication order for Diazepam Oral Soln 1 MG/ML and it was

administered 3 times (every 12 hours).

Four rows will be inserted into the drug_exposure table. Showing only the relevant columns:

drug*exposure*id	Person_id	Visit*occurrence*id	drug*concept*id	drug*type*concept_id	effective*drug*dose
1111	12345	678910	19076372	581373 (Physician Administered-EHR Order)	0.12
1112	12345	678910	19076372	38000180 (Inpatient Administration)	0.12
1113	12345	678910	19076372	38000180 (Inpatient Administration)	0.12
1114	12345	678910	19076372	38000180 (Inpatient Administration)	0.12

- drug*type*concept_id for Inpatient Medication Order = 581373 (Physician administered drug (identified from EHR order))
- drug*type*concept_id for Inpatient Administration= 38000180 (Inpatient Administration)

To link these two values, use the fact relationship table (**OPTIONAL FOR PEDSnet v3.2**):

Domain*concept*id_1	fact*id*1	Domain*concept*id_2	fact*id*2	relationship*concept*id
Drug	1111	Drug	1112	Occurrence of
Drug	1111	Drug	1113	Occurrence of
Drug	1111	Drug	1114	Occurrence of
Drug	1112	Drug	1111	Subsumes
Drug	1113	Drug	1111	Subsumes
Drug	1114	Drug	1111	Subsumes

Because the domain concept id and relationship concept id are integers the following is an example of how this data will be represented:

Domain*concept*id_1	fact*id*1	Domain*concept*id_2	fact*id*2	relationship*concept*id
13	1111	13	1112	44818848
13	1111	13	1113	44818848
13	1111	13	1114	44818848
13	1112	13	1111	44818723
13	1113	13	1111	44818723
13	1114	13	1111	44818723

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
drug*exposure*id	Yes	Yes	Integer	A system-generated unique identifier for each drug exposure	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
person_id	Yes	Yes	Integer	A foreign key identifier to the person who is experiencing the condition. The demographic details of that person are stored in the person table.	
drug*concept*id	Yes	Yes	Integer	A foreign key that refers to a standard drug concept identifier in the Vocabulary.	Valid drug concept IDs are mapped to RxNorm using the source to concept map table to transform source codes (GPI, NDC etc to the RxNorm target). In the event of multiple RxNorm mappings please see Note 5. See note 6 for guide.
drug*exposure*start_date	Yes	Yes	Date	The start date of the utilization of the drug. The start date of the prescription, the date the prescription was filled, the date a drug was dispensed or the date on which a drug	If the start date of the drug is null in the source system, use the ordering date as the start date.

				administration procedure was recorded are acceptable.	No date shifting.
drug*exposure*end_date	No	Provide When Available	Date	The end date of the utilization of the drug	No date shifting.
drug*exposure*order_date	No	Provider When available	Date	The order date of the drug	No date shifting.
drug*exposure*start_datetime	Yes	Yes	Datetime	The start date and time of the utilization of the drug. The start date of the prescription, the date the prescription was filled, the date a drug was dispensed or the date on which a drug administration procedure was recorded are acceptable.	No date shifting. Full date and time. **If there is no time associated with the date assert midnight for the start time**
drug*exposure*end_datetime	No	Provide When Available	Datetime	The end date and time of the utilization of the drug	No date shifting. Full date and time. **If there is no time associated with the date assert 11:59:59 pm for the end time**
drug*exposure*order_datetime	No	Provider When available	Datetime	The order date and time of the drug	If the start datetime of the drug is null in the source system, use the ordering datetime as the start datetime. No date shifting.Full date and time. **If there is no time associated with the date assert midnight for the start time**
drug*type*concept_id	Yes	Yes	Integer	A foreign key to a standard concept identifier of the type of drug exposure in the Vocabulary as represented in the source data	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where concept*class*id ='Drug Type')* *select * from concept where domain*id ='Drug Type' yields 13 valid concept*ids.* *If none are correct, use concept*id = 0. For the PEDSnet drug types listed above, use the following concept*ids:* • *Prescription dispensed in pharmacy (dispensed meds pharma information): concept*id = 38000175 • Inpatient Medication Order: 581373 • Inpatient administration (MAR entries): concept*id = 38000180* • *Prescription written: concept*id = 38000177
stop_reason	No	Provide When Available	Varchar	The reason, if available, where the medication was stopped, as indicated in the source data.	Valid values include therapy completed, changed, removed, side effects, etc. Note that a stop_reason does not necessarily imply that the medication is no longer being used at all, and therefore does not mandate that the end date be assigned.
refills	No	Provide When Available	Integer	The number of refills after the initial prescription	See Note 2. Extract numbers as much as possible , full value should be a part of the xml sig field.
quantity	No	Provide When Available	Integer	The quantity of the drugs as recorded in the original prescription or dispensing record	See Note 2. Extract numbers as much as possible , full value should be a part of the xml sig field.
days_supply	No	Provide When Available	Integer	The number of days of supply the medication as recorded in the original prescription or dispensing record	

sig	No	Provide When Available	CLOB (XML Structure)	The directions on the drug prescription as recorded in the original prescription (and printed on the container) or the dispensing record	See Note 4
route*concept*id	No	Provide When Available	Integer	A foreign key that refers to a standard administration route concept identifier in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Route') select * from concept where domain*id='Route' and invalid*reason is null yields 70 valid concept*ids.* • *Within the set of 70 valid concept ids, duplicates may exist. If this is the case, use the standard concept (standard*concept='S') first for mapping and then the non-standard concept for all other cases If none are correct, use concept_id = 0.
effective*drug*dose	No	Provide When Available	Float	Numerical value of drug dose for this drug_exposure record	See note 1
eff*drug*dose*source*value	No	Provide When Available	Varchar	The drug dose for this drug_exposure record as it appears in the source	
dose*unit*concept_id	No	Provide When Available	Integer	A foreign key to a predefined concept in the Standard Vocabularies reflecting the unit the effective drug_dose value is expressed	**See note 1** Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id = UCUM) select * from concept where vocabulary*id = 'UCUM' yields 971 valid concept*ids.
lot_number	No	Site preference	Varchar	An identifier to determine where the product originated	
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who initiated (prescribed) the drug exposure	Any valid provider_id allowed (see definition of providers in PROVIDER table) Document how selection was made.
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit in the visit table during which the drug exposure initiated.	See VISIT.visit*occurrence*id (primary key)
drug*source*value	No	Provide When Available	Varchar	The source drug value as it appears in the source data. The source is mapped to a standard RxNorm concept and the original code is stored here for reference.	Please be sure to include your source code and the drug name in this field. This will be useful in the event that there is no RxNorm mapping for your local medication code. Please use the pipe delimiter "|" when concatenating values. See note 6.
drug*source*concept_id	No	Provide When Available	Integer	A foreign key to a drug concept that refers to the code used in the source	In this case, if you are transforming drugs from GPI or NDC to RXNorm. The concept id that corresponds to the GPI or NDC value for the drug belongs here. See note 6. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**

route*source*value	No	Provide When Available	Varchar	The information about the route of administration as detailed in the source	
dose*unit*source_value	No	Provide When Available	Varchar	The information about the dose unit as detailed in the source	
frequency	No	Optional	Varchar	The frequency information as available from the source	
dispense*as*written*concept*id	No	Optional	Integer	A foreign key to value in the source for that determines if the medication is to be dispensed as written	For Pedsnet CDM v3.2, please use the following: • Yes=4188539 • No=4188540 • No Information: concept*id = 44814650 vocabulary*id='PCORNet') • Unknown: concept*id = 44814653* • *Other: concept*id = 44814649 If none are correct, use concept_id = 0.

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.11.1 Additional Notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to drug exposures. All drug exposures are included for an active patient.
- The Visit during which the drug exposure was initiated by is recorded through a reference to the VISIT_OCCURRENCE table. This information is not always available.
- The Provider initiating the drug exposure is recorded through a reference to the PROVIDER table. This information is not always available.

1.12 MEASUREMENT

The measurement domain captures measurement orders and measurement results. The measurement domain can contain laboratory results and vital signs.

Specifically this table includes: - Height/length in cm (use numeric precision as recorded in EHR) - Height/length type - Weight in kg (use numeric precision as recorded in EHR) - Body Mass Index - Temperature in degrees Celsius - Head Circumference in cm (use numeric precision as recorded in EHR) - BIRTH Height/length in cm (use numeric precision as recorded in EHR) - BIRTH Height/length type - BIRTH Weight in kg (use numeric precision as recorded in EHR) - BIRTH Head Circumference in cm (use numeric precision as recorded in EHR) - FVC in liters - FVC pre (if recorded differently) in liters - FVC post in liters - FEV 1 in liters - FEV 1 pre (if recorded differently) in liters - FEV 1 post in liters - FEF 25-75 in liters per minute - FEF 25-75 pre (if recorded differently) in liters per minute - FEF 25-75 post in liters per minute - Peak Flow (PF) in milliteres per second - Peak Flow post in milliteres per second - Body mass index in kg/m^2 (extracted only if height and weight are not present) - Systolic blood pressure in mmHg - Where multiple readings are present on the same encounter, create measurement records for **ALL** readings - Diastolic blood pressure in mmHg - Where multiple readings are present on the same encounter, create measurement records for **ALL** readings - Blood pressure position is described by the selection of a concept*id that contains the BP position as describe below. For example, in Table 1, concept*id 3018586 is Systolic Blood Pressure, Sitting. This concept_id identifies both the measurement (Systolic BP) and the BP position (sitting). - Invasive Mean arterial pressure (MAP) - Non - Invasive Mean arterial pressure (MAP) - Heart Rate - Oxygen Saturation (SpO2) - Respiration Rate - Vital source - All available component Level Labs. The Lab Listing and PEDSNet LOINC Mapping can be found here

Table 3: Measurement concept IDs for PCORnet concepts. Concept*ids from vocabulary*id 99 are non-standard codes.

Domain id	Measurement concept ID	Vocab ID	Value as concept ID	Concept description	Vocab ID
Vital	3013762		See Note 1	Weight	
Vital	3023540		See Note 1	Height	
Vital	21490852		See Note 1	Invasive Mean arterial pressure (MAP)	
Vital	21492241		See Note 1	Non-Invasive Mean arterial pressure (MAP)	
Vital	3027018		See Note 1	Heart Rate	
Vital	40762499		See Note 1	Oxygen Saturation (SpO2)	
Vital	3024171		See Note 1	Respiration Rate	
Vital	3038553		See Note 3	BMI kg/m^2	
Vital	3034703		See Note 3	Diastolic Blood Pressure - Sitting	

Vital	3034703		See Note 2	Diastolic Blood Pressure - Sitting	
Vital	3019962		See Note 2	Diastolic Blood Pressure - Standing	
Vital	3013940		See Note 2	Diastolic Blood Pressure - Supine	
Vital	3012888		See Note 2	Diastolic BP Unknown/Other	
Vital	3018586		See Note 2	Systolic Blood Pressure - Sitting	
Vital	3035856		See Note 2	Systolic Blood Pressure - Standing	
Vital	3009395		See Note 2	Systolic Blood Pressure - Supine	
Vital	3004249		See Note 2	Systolic BP Unknown/Other	
Vital	2000000041		See Note 3	Weight for age z score NHANES	
Vital	2000000042		See Note 3	Height for age z score NHANES	
Vital	2000000043		See Note 3	BMI for age z score NHANES	
Vital	2000000044		See Note 3	Weight for age z score WHO	
Vital	2000000045		See Note 3	Height for age z score WHO	
Vital	2000000046		See Note 3	Systolic BP for age/height Z score NCBPEP	
Vital	2000000047		See Note 3	Diastolic BP for age/height Z score NCBPEP	
Vital	3020891		See Note 1	Temperature	
Vital	3001537		See Note 1	Head Circumference	
Lab	3020158		See Note 1	FVC	
Lab	3037879		See Note 1	FVC pre (if recorded differently)	
Lab	3001668		See Note 1	FVC post	
Lab	3024653		See Note 1	FEV 1	
Lab	3005025		See Note 1	FEV 1 pre (if recorded differently)	
Lab	3023550		See Note 1	FEV 1 post	
Lab	42868460		See Note 1	FEF 25-75	
Lab	42868461		See Note 1	FEF 25-75 pre (if recorded differently)	
Lab	42868462		See Note 1	FEF 25-75 post	
Lab	3023329		See Note 1	Peak Flow (PF)	
Lab	2000000064		See Note 1	Peak Flow post	
Vital	3013762		See Note 7	BIRTH Weight	
Vital	3023540		See Note 7	BIRTH Height	
Vital	3001537		See Note 7	BIRTH Head Circumference	
Measurement Type	44818704	Measurement Type	See Note 3	Patient reported	
Measurement Type	2000000032	Measurement Type	See Note 3	Vital sign from device direct feed	
Measurement Type	2000000033	Measurement Type	See Note 3	Vital sign from healthcare delivery setting	
Measurement Type	44818702	Measurement Type	See Note 4	Clinical and Laboratory Results	

Note 1: For height, weight, temperature, head circumference, BMI, Pulmary Function, heart rate, oxygen saturation, respiratory rate, and mean arterial pressure (MAP) measurements insert the recorded measurement into the value*as*number field.

Note 2: Systolic and diastolic pressure measurements will generate two observation records one for storing the systolic blood pressure measurement and a second for storing the diastolic blood pressure measurement. Select the right SBP or DBP concept code that also represents the CORRECT recording position (supine, sitting, standing, other/unknown). To tie the two measurements together (the systolic BP measurement and the diastolic BP measurement records), use the FACT_RELATIONSHIP table.

Example: Person*id = 12345 on visit*occurrence_id = 678910 had orthostatic blood pressure measurements performed in the healthcare delivery setting as follows:

- Supine: Systolic BP 120; Diastolic BP 60
- Standing: Systolic BP 144; Diastolic BP 72

Four rows will be inserted into the measurement table. Showing only the relevant columns:

Measurement_id	**Person_id**	**Visit*occurrence*id**	**measurement*concept*id**	**measurement*type*concept_id**	**Value*as*Number**	**Value*as*Concept_ID**
66661	12345	678910	3009395	2000000033	120	
66662	12345	678910	3013940	2000000033	60	
66663	12345	678910	3035856	2000000033	144	
66664	12345	678910	3019962	2000000033	72	

- Measurement*concept*id = 3009395 = systolic BP - supine; measurement*concept*id = 3013940 = diastolic BP supine
- Measurement*concept*id = 3035856 = systolic BP standing; measurement*concept*id = 3019962 = diastolic BP standing
- measurement*type*concept_id = 2000000033 (Vital Sign from healthcare delivery setting).

To link these two values, use the fact relationship table:

Domain*concept*id_1	**fact*id*1**	**Domain*concept*id_2**	**fact*id*2**	**relationship*concept*id**
Measurement	66661	Measurement	66662	Asso with finding
Measurement	66662	Measurement	66661	Asso with finding
Measurement	66663	Measurement	66664	Asso with finding
Measurement	66664	Measurement	66663	Asso with finding

Because the domain concept id and relationship concept id are integers the following is an example of how this data will be represented:

Domain*concept*id_1	**fact*id*1**	**Domain*concept*id_2**	**fact*id*2**	**relationship*concept*id**
21	66661	21	66662	44818792
21	66662	21	66661	44818792
21	66663	21	66664	44818792
21	66664	21	66663	44818792

- Two rows in the FACT_RELATIONSHIP table link the *supine* diastolic BP to the supine systolic BP.
- Two rows in the FACT_RELATIONSHIP table link the *standing* diastolic BP to the standing systolic BP.

Note 3: Measurement type concept*ids are used as values for the measurement*type*concept*id field. In addition, the following observations are derived via the DCC (concept*ids to be assigned in future version of this document. However, concept*ids are not needed for ETL since these observations will be derived/calculated using scripts developed by DCC):

- Body mass index in kg/m^2 if not directly extracted
- Height/length z score for age/sex using NHANES 2000 norms for measurements at which the person was <240 months of age. In the absence of a height/length type for the measurement, recumbent length is assumed for ages <24 months, and standing height thereafter.
- Weight z score for age/sex using NHANES 2000 norms for measurements at which the person was <240 months of age.
- BMI z score for age/sex using NHANES 2000 norms for visits at which the person was between 20 and 240 months of age.
- Systolic BP z score for age/sex/height using NHBPEP task force fourth report norms.
- Diastolic BP z score for age/sex/height using NHBPEP task force fourth report norms.

Note 4: For PEDSnet v3.2, PCORI has requested that sites provide all labs available. - Sites will determine what labs constitute "all labs" at their site. There is no obligation to go outside your main lab result system or source tables. - Sites will not send text labs that potentially contain PHI in the source value.

Please use the following table as a guide to determine how to populate the `measurement_source_value`, `measurement_source_concept_id` and `measurement_concept_id` for LAB Values.

As a general rule, first map to the PEDSnet standard LOINC List for corresponding labs in the network listing. If the lab does not exist in the network listing, send local LOINC Code where available. If there is no local LOINC Code available, map to zero for the `measurement_concept_id`

Note 5:For lab results, please include the closest result to the **final** result available at the time of your extraction from the source.

You have in your source system	Network Listing Lab	Measurement*source*value	Measurement*source*concept_id	measurement*concept*id
Lab code is institutional-specific code (not CPT/not LOINC)	**Yes**	• Local code or • Local name or • Local name l Local code/li> (any above are OK)	0 (zero)	PEDSnet LOINC code's concept_id (provided by DCC)
Lab code is CPT code	**Yes**	• CPT Code • Local name or • Local name lCPT code (any above are OK)	OMOP's concept_id for CPT code	PEDSnet's LOINC code's concept_id (provided by DCC)
Lab code is LOINC code that is same as PEDSnet's LOINC code	**Yes**	• LOINC Code • Local name or • Local name l LOINC code (any above are OK)	PEDSnet's LOINC code's concept_id (provided by DCC)	PEDSnet's LOINC code's concept_id (provided by DCC)
Lab code is LOINC code that is different than PEDSnet LOINC	**Yes**	Same as above	OMOP's concept_id for your LOINC code	PEDSnet's LOINC code's concept_id (provided by DCC)
Lab code is institutional-specific code (not CPT/not LOINC)	**No**	• Local code or • Local name or • Local name l Local code/li> (any above are OK)	0 (zero)	0 (zero)
Lab code is CPT code	**No**	• CPT Code • Local name or • Local name lCPT code (any above are OK)	OMOP's concept_id for CPT code	0 (zero)
Lab code is LOINC code	**No**	• LOINC Code • Local name or • Local name l LOINC code (any above are OK)	OMOP's concept_id for your LOINC code	OMOP's concept_id for your LOINC code

Note 5: Please use the following table as a guide to determine how to populate the `range_low`, `range_low_source_value`, `range_low_operator_concept_id`, `range_high`, `range_high_source_value` and `range_low_operator_concept_id` for LAB Values

You have in your source system	range high/ range low	range high source value / range low source value	range low/high operator concept id
Numerical value `Examples: 7,8.2,100`	Numerical Value `Examples: 7,8.2,100`	Numerical value `Examples: 7,8.2,100`	0
Limits `Examples: <2, >100, less than 5`	Numerical Value of the limit `Examples: 2, 100, 5`	Limits `Examples: <2, >100, less than 5`	Corresponding concept to the modifier `Examples:4171756,4172704 ,417175`
Categorical/Qualitative Value `Examples: HIGH,LOW,POSITIVE,NEGATIVE`		Categorical/Qualitative Value `Examples: HIGH,LOW,POSITIVE,NEGATIVE`	0

Note 6: Please only include final Lab Results.

Note 7: For BIRTH height, weight and head cirucmference records please use the `measurement_type_concept_id` = 44818704.

Exclusions:

1. Cancelled Lab orders
2. Lab orders that are 'NOT DONE' or 'INCOMPLETE'

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
				A system-generated unique identifier	

measurement_id	Yes	Yes	Integer	for each measurement	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
person_id	Yes	Yes	Integer	A foreign key identifier to the person who the measurement is being documented for. The demographic details of that person are stored in the person table.	
measurement*concept*id	Yes	Yes	Integer	A foreign key to the standard measurement concept identifier in the Vocabulary.	Valid Measurement Concepts belong to the "Measurement" domain. Measurement Concepts are based mostly on the LOINC vocabulary, with some additions from SNOMED-CT. Measurement must have an object represented as a concept, and a finding. A finding (see below) is represented as a concept, a numerical value or a verbatim string or more than one of these. There are three Standard Vocabularies defined for measurements: Laboratory tests and values: Logical Observation Identifiers Names and Codes (**LOINC**) (Vocabulary*id=LOINC).* *(FYI: Regenstrief also maintains the **"LOINC Multidimensional Classification"** Vocabulary*id=LOINC Hierarchy) Qualitative lab results: A set of SNOMED-CT Qualifier Value concepts (vocabulary*id=SNOMED)* *Laboratory units: Unified Code for Units of Measure (**UCUM**( )Vocabulary*id=UCUM) All other findings and observables: SNOMED-CT (Vocabulary_id=SNOMED). For vital signs, pull information from flow sheet rows (EPIC sites only). For lab values, please see Note 4.
measurement_date	Yes	Yes	Date	The date of the measurement.	For lab orders, this should be the specimen collection time. No date shifting.
measurement_datetime	Yes	Yes	Datetime	The time of the measurement.	For lab orders, this should be the specimen collection time. No date shifting. Full date and time. If there is no time associated with the date assert midnight.
measurement*order*date	No	Provide When Available	Date	This field applies to Lab Orders only. This is the date the lab was ordered in the source.	No date shifting.
measurement*order*datetime	No	Provide When Available	Datetime	This field applies to Lab Orders only. This is the time the lab was ordered in the source.	No date shifting. Full date and time. If there is no time associated with the date assert midnight.
measurement*result*date	No	Provide When Available	Date	This field applies to Lab Orders only. This is the date the lab resulted in the source.	No date shifting.
measurement*result*datetime	No	Provide When Available	Datetime	This field applies to Lab Orders only. This is the time the lab resulted in the source.	No date shifting. Full date and time. If there is no time associated with the date assert midnight.
					Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where*

measurement*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined concept identifier in the Vocabulary reflecting the type of the measurement.	*vocabulary*id =Meas Type or concept*class*id='Meas Type') select * from concept where vocabulary*id ='Meas Type' or concept*class*id='Meas Type' yields 8 valid concept*ids. For Pedsnet CDM v2.7, please use the following: • Vital Sign from healthcare delivery setting= 2000000033 • Vital Sign from healthcare device= 2000000032 • Clinical and Laboratory result = 44818702 • Pathology finding = 44818703 • Patient reported value = 44818704 • Derived Value = 45754907
operator*concept*id	No	Provide When Available	Integer	A foreign key identifier to the mathematical operator that is applied to the value*as*number.Operators are <, ≤, =, ≥, >	Valid operator concept id are found in the concept table select * from concept where domain_id='Meas Value Operator' yields 5 valid concept ids. • Operator <= : 4171754 • Operator >= : 4171755 • Operator < : 4171756 • Operator = 4172703 • Operator > : 4172704
value*as*number	No (see convention)	Provide When Available	Float	The measurement result stored as a number. This is applicable to measurements where the result is expressed as a numeric value.	Value must be represented as at least one of {value*as*number, value*as*string or values*as*concept_id}.
value*as*concept_id	No (see convention)	Provide When Available	Integer	A foreign key to a measurement result stored as a concept identifier. This is applicable to measurements where the result can be expressed as a standard concept from the Vocabulary (e.g., positive/negative, present/absent, low/high, etc.).	Value must be represented as at least one of {value*as*number, value*as*string or values*as*concept*id}. Valid concepts are found in the concept table* *select * from concept where domain*id='Meas Value' and concept*class*id='Qualifier Value' and standard_concept='S' yields 186 valid concept ids.
unit*concept*id	No	Provide When Available	Integer	A foreign key to a standard concept identifier of measurement units in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id = UCUM) select * from concept where vocabulary*id = 'UCUM' yields 971 valid concept*ids. If none are correct, use concept*id = 0.* *For the PEDSnet measurements listed above, use the following concept*ids: • Centimeters (cm): concept*id = 8582* • *Kilograms (kg): concept*id = 9529 • Kilograms per square meter (kg/m^2): concept*id = 9531* • *Millimeters mercury (mmHG): concept*id = 8876 • degree Celsius (C): 8653 • Liters (L): 8519 • Liters per minute (L/min): 8698 • Milliliters per second (mL/sec): 44777614 • Per Min (/min): 8541 • Pecent (%): 8554

range_low	No	Provide When Available	Float	The lower limit of the normal range of the measurement. It is not applicable if the measurement results are non-numeric or categorical, and must be in the same units of measure as the measurement value.	
range*low*source_value	No	Provide When Available	Varchar	The lower limit of the normal range of the measurement as it appears in the source.	See note 5
range*low*operator*concept*id	No	Optional	Integer	A foreign key to the modifier of lower limit of the normal range of the measurement as it appears in the source as a concept identifier.	See note 5
range_high	No	Provide When Available	Float	The upper limit of the normal range of the measurement. It is not applicable if the measurement results are non-numeric or categorical, and must be in the same units of measure as the measurement value.	
range*high*source_value	No	Provide When Available	Varchar	The upper limit of the normal range of the measurement as it appears in the source.	See note 5
range*high*operator*concept*id	No	Optional	Integer		A foreign key to the modifier of higher limit of the normal range of the measurement as it appears in the source as a concept identifier.
provider_id	No	Provide When Available	Integer	A foreign key to the provider in the provider table who was responsible for making the measurement.	
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit in the visit table during which the observation was recorded.	
measurement*source*value	Yes	Yes	Varchar	The measurement name as it appears in the source data. This code is mapped to a standard concept in the Standardized Vocabularies and the original code is, stored here for reference.	This is the name of the value as it appears in the source system. Please use the pipe delimiter "|" when concatenating values. For lab values, please see Note 4.
measurement*source*concept_id	No	Provide When Available	Integer	A foreign key to a concept that refers to the code used in the source.	This is the concept id that maps to the source value in the standard vocabulary. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0**
unit*source*value	No	Provide When Available	Varchar	The source code for the unit as it appears in the source data. This code is mapped to a standard unit concept in the Standardized Vocabularies and the original code is, stored here for reference.	Raw unit value (Ounces,Inches etc) For lab values, please see Note 4.
value*source*value	Yes	Yes	Varchar	The source value associated with the structured value stored as numeric or concept. This field can be used in instances where the source data are transformed	• For BP values include the raw 'systolic/diastolic' value E.g. 120/60 • If there are transformed values (E.g. Weight,Height, Head Circumference, Pulmonary Function Values and Temperature) please insert the raw data before transformation. For Categorical/Qualitative Lab result values, please

					use this field to store the raw result from the source.
specimen*concept*id	No	Optional	Integer	This field is applicable for lab values only. A foreign key to a concept that refers to the specimen source.	This is the concept id that maps to the specimen source value in the standard vocabulary. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0** Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Specimen' and vocabulary*id='SNOMED' and concept*class*id='Specimen' and standard*concept='S' and invalid*reason is null)* *select * from concept where domain*id='Specimen' and vocabulary*id='SNOMED' and concept*class*id='Specimen' and standard*concept='S' and invalid*reason is null* ***The specimen*source_value column consists of the "SPECIMEN TYPEISPECIMEN SOURCE". When mapping using the above mentioned valueset, please attempt to map using the "SPECIMEN TYPE" first. If the "SPECIMEN TYPE" is not available at your site, please map using the "SPECIMEN SOURCE"**
specimen*source*value	No	Provide When Available	Varchar	This field is applicable for lab values only. This source value for the specimen source as it appears in the source	Please populate this value as a pipe delimited field "SPECIMEN TYPEISPECIMEN SOURCE" Eg. "URINEICATHETER"
priority*concept*id	No	Provide When Available	Integer	This field applies to Lab Orders only. A foreign key to a concept that refers to the lab priority as described in the source	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Procedure' and vocabulary*id='PEDSnet' and concept*class*id='Qualifier Value')* *select * from concept where (domain*id='Procedure' and vocabulary*id='PEDSnet' and concept*class*id='Qualifier Value') or (vocabulary*id='PCORNet' and concept*class*id='Undefined') yields 7 valid concept*ids.* *For Pedsnet CDM v3.2, please use the following:* • *Expedited (includes Today)=2000000059* • *STAT (includes ASAP)=2000000060* • *Routine = 2000000061* • *Timed = 2000000062* • *No Information: concept*id = 44814650 vocabulary*id='PCORNet')* • *Unknown: concept*id = 44814653 • Other: concept_id = 44814649
priority*source*value	No	Provide When Available	Varchar	This field applies to Lab Orders only. The lab priority as described in the source	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.12.1 Additional Notes

- The 1/1/2009 date limitation that is used to define a PEDSnet active patient is **NOT** applied to measurements. All measurements are included for an active patient. For PEDSnet CDM v3.2, we limit measurements to only those that appear in Table 3 (for vital signs).

- Measurements have a value represented by one of a concept ID, a string, **OR** a numeric value.
- The Visit during which the measurement was made is recorded through a reference to the VISIT_OCCURRENCE table. This information is not always available.
- The Provider making the measurement is recorded through a reference to the PROVIDER table. This information is not always available.

1.13 FACT RELATIONSHIP

The fact relationship domain contains details of the relationships between facts within one domain or across two domains, and the nature of the relationship. Examples of types of possible fact relationships include: person relationships (mother-child linkage), care site relationships (representing the hierarchical organization structure of facilities within health systems), drug exposures provided due to associated indicated condition, devices used during the course of an associated procedure, and measurements derived from an associated specimen. All relationships are directional, and each relationship is represented twice symmetrically within the fact relationship table.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
Domain*concept*id_1	Yes	Yes	Integer	The concept representing the domain of fact one, from which the corresponding table can be inferred.	Predefined value set: • Visit domain (ED->Inpatient linking) = 8 • Measurement domain (blood pressure linking) = 21 • Observation domain (tobacco linking) = 27 • Drug Domain (Inpatient Medication Orders) = 13
Fact*id*1	Yes	Yes	Integer	The unique identifier in the table corresponding to the domain of fact one.	
Domain*concept*id_2	Yes	Yes	Integer	The concept representing the domain of fact two, from which the corresponding table can be inferred.	Predefined value set: • Visit domain (ED->Inpatient linking) = 8 • Measurement domain (blood pressure linking) = 21 • Observation domain (tobacco linking) = 27 • Drug Domain (Inpatient Medication Orders) = 13
Fact*id*2	Yes	Yes	Integer	The unique identifier in the table corresponding to the domain of fact two.	
Relationship*concept*id	Yes	Yes	Integer	A foreign key to a standard concept identifier of relationship in the Standardized Vocabularies.	Predefined value set: • Occurs before (ED Visit) = 44818881 • Occurs after (Inpatient Visit) = 44818783 • Associated with finding (blood pressures) = 44818792 • Occurrence of (Inpatient Medication Orders=44818848 • Subsumes (Inpatient Medication Orders=44818723 • No matching concept (tobacco) = 0

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.13.2 Additional Notes

- Blood Pressure Systolic and Diastolic Blood Pressure Values will be mapped using the fact relationship table. See Note 2 in the Measurement section for instructions.
- ER Visits that result in an Inpatient Encounter will be mapped using the fact relationship table. See Additional Notes in the Visit Occurrence section for instructions.
- Tobacco, smoking and tobacco type associations will be mapped using the fact relationship table. See Note 4 in the Observation section for instructions.
- For version 3.2 of PEDSnet, the inpatient medication orders and administrations linking is ***optional***. See Note 8 in the Drug_Exposure section

1.14 VISIT_PAYER

The visit payer table documents insurance information as it relates to a visit in visit*occurrence. For this reason the key of this table will be visit*occurrence*id and visit*payer_id. **This table is CUSTOM to Pedsnet.**

Note 1: There can be multiple payers (primary/secondary) for a single visit. If you are able to obtain multiple payer information at your site please populate the visit payer table with this information. If you are not able to obtain secondary or additional payers for your visit occurrences at your site, please populate the primary payer and inform the DCC.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
visit*payer*id	Yes	Yes	Integer	A system-generated unique identifier for each visit payer relationship.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
visit*occurrence*id	Yes	Yes	Integer	A foreign key to the visit in the visit table where the payer was billed for the visit.	
plan_name	Yes	Yes	Varchar	The untransformed payer/plan name from the source data	
plan_type	No	Provide When Available	Varchar	A standardized interpretation of the plan structure	Please only map your plan type to the following categories: • HMO • PPO • POS • Fee for service • Other/Unknown If the categories are unclear, please work with your billing department or local experts to determine how to map plans to these values.
plan_class	Yes	Yes	Varchar	A list of the "payment sources" most often used in demographic analyses	Please map your plan type to the following categories: • Private/Commercial • Medicaid/sCHIP • Medicare • Other public • Self-pay • Other/Unknown Please work with your billing department or local experts to determine how to map plans to these values.
visit*payer*type*concept*id	No	Optional	Integer	A foreign key to a concept that refers to the status of the payer in the source.	This is the concept id that maps to the source value in the standard vocabulary. **If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0** For PEDSnet v3.2, use the following concept*ids:* • *Payer is primary" concept*id = 31968 • Payer is secondary: concept*id = 31969* *If you are unable to distinguish between primary and secondary payers. Please map to the following:* • *Payer is secondary: concept*id = 31969

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.14.1 Additional Notes

- If you cannot map your plan to any of the above values for plan*type or plan*class, please map them to Other/unknown, and inform the DCC if the above list of values is not complete or sufficient.

1.15 MEASUREMENT_ORGANISM

The measurement organism table contains organism information related to laboratory culture results in the measurement table. **This table is CUSTOM to Pedsnet.**

Note 1: There can be multiple organisms for a single culture laboratory result.

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
meas*organism*id	Yes	Yes	Integer	A system-generated unique identifier for each organism culture relationship.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
measurement_id	Yes	Yes	Integer	A foreign key to the lab result in the measurement table where the organism was observed.	
person_id	Yes	Yes	Integer	A foreign key identifier to the person who the measurement is being documented for. The demographic details of that person are stored in the person table.	
visit*occurrence*id	No	Provide When Available	Integer	A foreign key to the visit where the culture lab was ordered	
organism*concept*id	Yes	Yes	Integer	A foreign key to a standard concept identifier for the organism in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id = SNOMED and concept*class*id= Organism and standard*concept=S)* *select * from concept where vocabulary*id ='SNOMED' and concept*class*id='Organism' and standard*concept='S' yields 33039 valid concept*ids.
organism*source*value	Yes	Yes	Varchar	The organism value as it appears in the source.	
positivity_datetime	No	Optional	Datetime	The estimated date and time of initial growth as reported in the source.	

If a field marked as "Provide when available" for the network requirement is not available at your site, please relay this information to the DCC

1.15.1 Additional Notes

- The time to positivity field is marked as optional. Please inform the DCC in the provenance files if this data is available at your site.

1.16 ADT_OCCURRENCE

The adt*occurrence table contains information about distinct admission, discharge, or transfer events that occur as part of a clinical visit. The typical use case is to identify portions of an inpatient admission that represent different levels of care or locations within a facility, but it can be used for additional characteristics of a visits (e.g. specialty consultation). The time of each event must fall between the start and end times of the associated visit*occurrence. **This table is CUSTOM to Pedsnet.**

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
adt*occurrence*id	Yes	Yes	Integer	A unique identifier for each ADT event.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field
person_id	Yes	Yes	Integer	A foreign key identifier to the person for whom the visit is recorded.	
visit*occurrence*id	Yes	Yes	Integer	A foreign key identifier to the visit containing this event.	
adt_date	Yes	Yes	Date	The date of the adt event	
adt_datetime	Yes	Yes	Datetime	The datetime of the adt event	No date shifting. Full date and time. If there is no time associated with the date assert midnight for the start time.
care*site*id	No	Provide when available	Integer	A foreign key to the care site in which this adt event occurred.	

service*concept*id	Yes	Yes	Integer	A foreign key that refers to a adt event service concept identifier in the vocabulary. This concept describes the type of service associated with this adt event.	select * from concept where vocabulary*id ='PEDSnet' and concept*class*id='Service Type' and standard*concept='S' yields 14 valid concept*ids.* ***In PEDSnet CDM v3.2, only the NICU,CICU and PICU services are included.*** *The value set available for PEDSnet includes:* • *CICU (cardiac care) = 2000000079* • *NICU (neonatal care) = 2000000080* • *PICU (all other ICU) = 2000000078* • *Critical care = 2000000067* • *Intermediate care = 2000000068* • *Acute care = 2000000069* • *Observation care = 2000000070* • *Surgical site (includes OR, ASC) = 2000000071* • *Procedural service = 2000000072* • *Behavioral health = 2000000073* • *Rehabilitative service (includes PT, OT, ST) = 2000000074* • *Specialty service = 2000000075* • *Radiology = 2000000076* • *Hospital Outpatient = 2000000077 li>Unknown: concept*id = 44814653 • Other: concept*id = 44814649* • *No information: concept*id = 44814650
adt*type*concept_id	No	Provide when available	Integer	A foreign key that refers to an adt event type concept identifier in the vocabulary. This concept describes the type of the adt event.	select * from concept where vocabulary*id ='PEDSnet' and concept*class*id='ADT Event Type' yields 5 valid concept*ids. The value set for PEDSnet includes: • Admission = 2000000083 • Discharge = 2000000084 Transfer in = 2000000085 • Transfer out = 2000000086 • Census = 2000000087
prior*adt*occurrence_id	No	Provide when available	Integer	Foreign key into the adt_occurrence table pointing to the ADT record immediately preceding this record in the event stream for the visit. Must be populated for all but the first ADT even within a visit.	
next*adt*occurrence_id	No	Provide when available	Integer	Foreign key into the adt_occurrence table pointing to the ADT record immediately following this record in the event stream for the visit. Must be populated for all but the last ADT even within a visit.	
service*source*value	No	Provide when available	Varchar	The source data used to derive the service type for this event. It will typically be a department code from the ADT event.	
adt*type*source_value	No	Provide when available	Varchar	The source data used to identify the adt event type	

1.16.1 Additional Notes

- If a site is splitting (ED->Inpatient) encounters into two records in visit*occurrence, the ADT*OCCURRENCE.visit*occurence*id should link to the Inpatient visit*occurrence*id.

1.17 Immunization

The immunization domain captures immunization records.**This table is CUSTOM to Pedsnet.**

Note 1: Please use the following logic to populate the `immunization_concept_id`, `immunization_source_concept_id` and `immunization_source_value` based on what is available in your source system:

Site Information	procedure*concept*id	procedure*source*concept_id	procedure*source*value
Immunization Codes (NDC,RxNorm,CVX CPT-4, ICD-9-CM,ICD-10, HCPCS or OPCS-4)	Corresponding CVX Concept Code (may require manual mapping)	Corresponding Immunization Codes (NDC,RxNorm,CVX CPT-4, ICD-9-CM,ICD-10, HCPCS or OPCS-4) concept id	Immunization Name I Immunization Source Code
Custom Immunization Coding (that site can map to coding within standard vocabulary)	Corresponding CVX Concept Code (requires manual mapping)	Corresponding Immunization Codes (NDC,RxNorm,CVX CPT-4, ICD-9-CM,ICD-10, HCPCS or OPCS-4) concept id	Immunization Name I Custom Immunization Code
Custom Immunization Coding (that cannot be mapped using the standard vocabulary)	Corresponding CVX Concept Code (requires manual mapping)	0	Immunization Name I Custom Immunization Code

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
immunization_id	Yes	Yes	Integer	A system-generated unique identifier for each immunization record	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
person_id	Yes	Yes	Integer	A foreign key identifier to the person who the immunization record is being documented for. The demographic details of that person are stored in the person table.	
immunization*concept*id	Yes	Yes	Integer	A foreign key to the standard immunization concept identifier in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id='CVX') select * from concept where vocabulary*id='CVX' and invalid*reason is null yields 188 valid concept*ids.* *If none are correct, use concept*id = 0. Please see **Note 1** for guidance.
immunization*source*concept_id	No	Provide When Available	Integer	A foreign key to an immunization concept that refers to the code used in the source	**If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0** Please see **Note 1** for guidance.
immunization_date	Yes	Yes	Date	The date of the immunization.	This should be the date the immunization was administered. No date shifting.
immunization_datetime	Yes	Yes	Datetime	The time of the immunization.	This should be the date the immunization was administered. No date shifting. Full date and time. If there is no time associated with the date assert midnight.
immunization*source*value	Yes	Yes	Varchar	The immunization name as it appears in the source data. This code is mapped to a standard concept in the Standardized Vocabularies and the original code is, stored here for reference.	This is the name of the value as it appears in the source system. Please use the pipe delimiter "|" when concatenating values. Please see **Note 1** for guidance.
provider_id	No	Provide When	Integer	A foreign key to the provider in the provider table who was responsible for the	

		Available		immunization.	
imm*route*concept_id	No	Provide When Available	Integer	A foreign key that refers to a standard immunization administration route concept identifier in the Vocabulary.	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where domain*id='Route') select * from concept where domain*id='Route' and invalid*reason is null yields 70 valid concept*ids.* • *Within the set of 70 valid concept ids, duplicates may exist. If this is the case, use the standard concept (standard*concept='S') first for mapping and then the non-standard concept for all other cases If none are correct, use concept_id = 0.
immunization_dose	No	Provide When Available	Float	Numerical value of immunization dose for this immunization record	
imm*dose*unit*concept*id	No	Provide When Available	Integer	A foreign key to a predefined concept in the Standard Vocabularies reflecting the unit the immunization_dose value is expressed	Please include valid concept ids (consistent with OMOP CDMv5). Predefined value set (valid concept*ids found in CONCEPT table where vocabulary*id = UCUM) select * from concept where vocabulary*id = 'UCUM' yields 971 valid concept*ids.
imm*dose*unit*source*value	No	Provide When Available	Varchar	The information about the immunization dose unit as detailed in the source	
imm*route*source_value	No	Provide When Available	Varchar	The information about the route of immunization as detailed in the source	
visit*occurrence*id	No	Optional	Integer	A foreign key that refers to the visit associated with the immunization record.	
procedure*occurrence*id	No	Optional	Integer	A foreign key that refers to the procedure associated with the immunization record.	

1.18 DEVICE_EXPOSURE

The 'Device' domain captures information about a person's exposure to a foreign physical object or instrument which is used for diagnostic or therapeutic purposes through a mechanism beyond chemical action. Devices include implantable objects (e.g. pacemakers, stents, artificial joints), medical equipment and supplies (e.g. bandages, crutches, syringes), other instruments used in medical procedures (e.g. sutures, defibrillators) and material used in clinical care (e.g. adhesives, body material, dental material, surgical material).

Field	NOT Null Constraint	Network Requirement	Data Type	Description	PEDSnet Conventions
device*exposure*id	Yes	Yes	Integer	A system-generated unique identifier for each Device Exposure.	This is not a value found in the EHR. Sites may choose to use a sequential value for this field.
person_id	Yes	Yes	Integer	A foreign key identifier to the Person who is subjected to the Device. The demographic details of that Person are stored in the PERSON table.	
device*concept*id	Yes	Yes	Integer	A foreign key that refers to a Standard Concept identifier in the Standardized Vocabularies belonging to the 'Device' domain.	**For PEDSnet 3.2, Please use concept_id = 0.**
device*exposure*start_date	Yes	Yes	Date	The date the Device or supply was applied or used.	No date shifting. Full date.
device*exposure*start_datetime	Yes	Yes	Datetime	The date and time the Device or supply was applied or used.	No date shifting. Full date and time. If there is no time associated with the date assert midnight for the start time
device*exposure*end_date	No	No	Date	The date use of the Device or supply was ceased.	No date shifting. Full date.
device*exposure*end_datetime	No	No	Datetime	The date and time use of the Device or supply was ceased.	No date shifting. Full date.If there is no time associated with the date assert 11:59:59 pm for the end time
device*type*concept_id	Yes	Yes	Integer	A foreign key to the predefined Concept identifier in the Standardized Vocabularies reflecting the type of Device Exposure recorded.	select * from concept where concept*class*id='Device Type' yields 4 valid concept ids. FOR PEDSnet CDM v3.2, all of our observations are coming from electronic health records so set this field to concept_id = 44818707 (observation recorded from EHR Detail).
unique*device*id	No	Provide when available	Varchar	A UDI or equivalent identifying the instance of the Device used in the Person.	
quantity	No	No	Integer	The number of individual Devices used in the exposure.	
provider_id	No	Provide when Available	Integer	A foreign key to the provider in the PROVIDER table who initiated or administered the Device.	
visit*occurrence*id	No	Provide when available	Integer	A foreign key to the visit in the VISIT_OCCURRENCE table during which the Device was used.	
device*source*value	No	Yes	Varchar	The source code for the Device as it appears in the source data. This code is mapped to a Standard Device Concept in the Standardized Vocabularies and the original code is stored here for reference.	Please include the device name and model number when populating this field, by using the pipe delimiter "|" when concatenating values. **Example: Device Name "|" Model Number**
device*source*concept_id	Yes	Yes	Integer	A foreign key to a Device Concept that refers to the code used in the source.	If there is not a mapping for the source code in the standard vocabulary, use concept_id = 0

APPENDIX

PEDSnet-specific is supported by OMOP-supported Vocabulary id=PCORNet, which contains all of the additional concept_id codes needed in PEDSnet for PCORnet CDM V1.0, 2.0 and 3.2

A1. ABMS Specialty Category to OMOP V5 Specialty Mapping

http://www.abms.org/member-boards/specialty-subspecialty-certificates/

ABMS Specialty Category	OMOP Supported Concept for Provider ID	OMOP Concept_name	Domain_id	Vocabulary id
Addiction Psychiatry	38004498	Addiction Medicine	Provider Specialty	Specialty
Adolescent Medicine	45756747	Adolescent Medicine	Provider Specialty	ABMS
Adult Congenital Heart Disease	45756748	Adult Congenital Heart Disease	Provider Specialty	ABMS
Advanced Heart Failure and Transplant Cardiology	45756749	Advanced Heart Failure and Transplant Cardiology	Provider Specialty	ABMS
Aerospace Medicine	45756750	Aerospace Medicine	Provider Specialty	ABMS
Allergy and Immunology	38004448	Allergy/Immunology	Provider Specialty	Specialty
Anesthesiology	38004450	Anesthesiology	Provider Specialty	Specialty
Anesthesiology Critical Care Medicine	45756751	Anesthesiology Critical Care Medicine	Provider Specialty	Specialty
Blood Banking/Transfusion Medicine	45756752	Blood Banking/Transfusion Medicine	Provider Specialty	ABMS
Brain Injury Medicine	45756753	Brain Injury Medicine	Provider Specialty	ABMS
Cardiology	38004451	Cardiology	Provider Specialty	Specialty
Cardiovascular Disease	45756754	Cardiovascular Disease	Provider Specialty	ABMS
Child Abuse Pediatrics	45756755	Child Abuse Pediatrics	Provider Specialty	ABMS
Child and Adolescent Psychiatry	45756756	Child and Adolescent Psychiatry	Provider Specialty	ABMS
Clinical Biochemical Genetics	45756757	Clinical Biochemical Genetics	Provider Specialty	ABMS
Clinical Cardiac Electrophysiology	45756758	Clinical Cardiac Electrophysiology	Provider Specialty	ABMS
Clinical Cytogenetics	45756759	Clinical Cytogenetics	Provider Specialty	ABMS
Clinical Genetics (MD)	45756760	Clinical Genetics (MD)	Provider Specialty	ABMS
Clinical Informatics	45756761	Clinical Informatics	Provider Specialty	ABMS
Clinical Molecular Genetics	45756762	Clinical Molecular Genetics	Provider Specialty	ABMS
Clinical Neurophysiology	45756763	Clinical Neurophysiology	Provider Specialty	ABMS
Colon and Rectal Surgery	38004471	Colorectal Surgery	Provider Specialty	Specialty

Complex General Surgical Oncology	45756764	Complex General Surgical Oncology	Provider Specialty	ABMS
Congenital Cardiac Surgery	45756765	Congenital Cardiac Surgery	Provider Specialty	ABMS
Critical Care Medicine	38004500	Critical care (intensivist)	Provider Specialty	Specialty
Cytopathology	45756766	Cytopathology	Provider Specialty	ABMS
Dermatology	38004452	Dermatology	Provider Specialty	Specialty
Dermatopathology	45756767	Dermatopathology	Provider Specialty	ABMS
Developmental-Behavioral Pediatrics	45756768	Developmental-Behavioral Pediatrics	Provider Specialty	ABMS
Diagnostic Radiology	45756769	Diagnostic Radiology	Provider Specialty	ABMS
Emergency Medical Services	45756770	Emergency Medical Services	Provider Specialty	ABMS
Emergency Medicine	38004510	Emergency Medicine	Provider Specialty	Specialty
Endocrinology, Diabetes and Metabolism	45756771	Endocrinology, Diabetes and Metabolism	Provider Specialty	ABMS
Epilepsy	45756772	Epilepsy	Provider Specialty	ABMS
General Family Medicine	38004453	Family Practice	Provider Specialty	Specialty
Female Pelvic Medicine and Reconstructive Surgery	45756773	Female Pelvic Medicine and Reconstructive Surgery	Provider Specialty	ABMS
Forensic Psychiatry	45756775	Forensic Psychiatry	Provider Specialty	ABMS
Gastroenterology	38004455	Gastroenterology	Provider Specialty	Specialty
General Pediatrics (Primary Care)*	2000000063	General Pediatrics	Provider Specialty	PEDSNet
Geriatric Medicine	38004478	Geriatric Medicine	Provider Specialty	Specialty
Geriatric Psychiatry	45756776	Geriatric Psychiatry	Provider Specialty	ABMS
Gynecologic Oncology	38004513	Gynecology/Oncology	Provider Specialty	Specialty
Hematology	38004501	Hematology	Provider Specialty	Specialty
Hospice and Pallative Medicine	45756777	Hospice and Pallative Medicine	Provider Specialty	ABMS
Infectious Disease	38004484	Infectious Disease	Provider Specialty	Specialty
General Internal Medicine	38004456	Internal Medicine	Provider Specialty	Specialty

Internal Medicine - Critical Care Medicine	45756778	Internal Medicine - Critical Care Medicine	Provider Specialty	ABMS
Interventional Cardiology	45756779	Interventional Cardiology	Provider Specialty	ABMS
Interventional Radiology and Diagnostic Radiology	38004511	Interventional Radiology	Provider Specialty	Specialty
Maternal and Fetal Medicine	45756780	Maternal and Fetal Medicine	Provider Specialty	ABMS
Medical Biochemical Genetics	45756781	Medical Biochemical Genetics	Provider Specialty	ABMS
Medical Genetics and Genomics	45756782	Medical Genetics and Genomics	Provider Specialty	ABMS
Medical Oncology	38004507	Medical Oncology	Provider Specialty	Specialty
Medical Physics	45756783	Medical Physics	Provider Specialty	ABMS
Medical Toxicology	45756784	Medical Toxicology	Provider Specialty	ABMS
Molecular Genetic Pathology	45756785	Molecular Genetic Pathology	Provider Specialty	ABMS
Neonatal-Perinatal Medicine	45756786	Neonatal-Perinatal Medicine	Provider Specialty	ABMS
Nephrology	38004479	Nephrology	Provider Specialty	Specialty
Neurodevelopmental Disabilities	45756787	Neurodevelopmental Disabilities	Provider Specialty	ABMS
Neurological Surgery	38004459	Neurosurgery	Provider Specialty	Specialty
General Neurology	38004458	Neurology	Provider Specialty	Specialty
Neurology with Special Qualification in Child Neurology	45756788	Neurology with Special Qualification in Child Neurology	Provider Specialty	ABMS
Neuromuscular Medicine	45756789	Neuromuscular Medicine	Provider Specialty	ABMS
Neuropathology	45756790	Neuropathology	Provider Specialty	ABMS
Neuroradiology	45756791	Neuroradiology	Provider Specialty	ABMS
Neurotology	45756792	Neurotology	Provider Specialty	ABMS
Nuclear Medicine	38004476	Nuclear Medicine	Provider Specialty	Specialty
Nuclear Radiology	45756793	Nuclear Radiology	Provider Specialty	ABMS
Obstetrics and Gynecology	38004461	Obstetrics/Gynecology	Provider Specialty	Specialty
Occupational Medicine	38004492	Occupational Therapy	Provider Specialty	Specialty

Ophthalmology	38004463	Ophthalmology	Provider Specialty	Specialty
Orthopaedic Sports Medicine	45756794	Orthopaedic Sports Medicine	Provider Specialty	ABMS
Orthopedics/Orthopaedic Surgery	38004465	Orthopedics/Orthopedic Surgery	Provider Specialty	Specialty
Otolaryngology	38004449	Otolaryngology	Provider Specialty	Specialty
Pain Medicine	38004494	Pain Management	Provider Specialty	Specialty
Pathology	38004466	Pathology	Provider Specialty	Specialty
Pathology - Anatomic	45756795	Pathology - Anatomic	Provider Specialty	ABMS
Pathology - Chemical	45756796	Pathology - Chemical	Provider Specialty	ABMS
Pathology - Clinical	45756797	Pathology - Clinical	Provider Specialty	ABMS
Pathology - Forensic	45756798	Pathology - Forensic	Provider Specialty	ABMS
Pathology - Hematology	45756799	Pathology - Hematology	Provider Specialty	ABMS
Pathology - Medical Microbiology	45756800	Pathology - Medical Microbiology	Provider Specialty	ABMS
Pathology - Molecular Genetic	45756801	Pathology - Molecular Genetic	Provider Specialty	ABMS
Pathology - Pediatric	45756802	Pathology - Pediatric	Provider Specialty	ABMS
Pathology-Anatomic/Pathology-Clinical	45756803	Pathology-Anatomic/Pathology-Clinical	Provider Specialty	ABMS
Pediatric Medicine**	38004477	Pediatric Medicine	Provider Specialty	Specialty
Pediatric Anesthesiology	45756804	Pediatric Anesthesiology	Provider Specialty	ABMS
Pediatric Cardiology	45756805	Pediatric Cardiology	Provider Specialty	ABMS
Pediatric Critical Care Medicine	45756806	Pediatric Critical Care Medicine	Provider Specialty	ABMS
Pediatric Dermatology	45756807	Pediatric Dermatology	Provider Specialty	ABMS
Pediatric Emergency Medicine	45756808	Pediatric Emergency Medicine	Provider Specialty	ABMS
Pediatric Endocrinology	45756809	Pediatric Endocrinology	Provider Specialty	ABMS
Pediatric Gastroenterology	45756810	Pediatric Gastroenterology	Provider Specialty	ABMS
Pediatric Hematology-Oncology	45756811	Pediatric Hematology-Oncology	Provider Specialty	ABMS

Pediatric Infectious Diseases	45756812	Pediatric Infectious Diseases	Provider Specialty	ABMS
Pediatric Nephrology	45756813	Pediatric Nephrology	Provider Specialty	ABMS
Pediatric Otolaryngology	45756814	Pediatric Otolaryngology	Provider Specialty	ABMS
Pediatric Pulmonology	45756815	Pediatric Pulmonology	Provider Specialty	ABMS
Pediatric Radiology	45756816	Pediatric Radiology	Provider Specialty	ABMS
Pediatric Rehabilitation Medicine	45756817	Pediatric Rehabilitation Medicine	Provider Specialty	ABMS
Pediatric Rheumatology	45756818	Pediatric Rheumatology	Provider Specialty	ABMS
Pediatric Surgery	45756819	Pediatric Surgery	Provider Specialty	ABMS
Pediatric Transplant Hepatology	45756820	Pediatric Transplant Hepatology	Provider Specialty	ABMS
Pediatric Urology	45756821	Pediatric Urology	Provider Specialty	ABMS
Physical Medicine and Rehabilitation	38004468	Physical Medicine And Rehabilitation	Provider Specialty	Specialty
Plastic Surgery	38004467	Plastic And Reconstructive Surgery	Provider Specialty	Specialty
Plastic Surgery Within the Head and Neck	45756822	Plastic Surgery Within the Head and Neck	Provider Specialty	ABMS
Preventative Medicine	38004503	Preventive Medicine	Provider Specialty	Specialty
Psychiatry	38004469	Psychiatry	Provider Specialty	Specialty
Psychosomatic Medicine	45756823	Psychosomatic Medicine	Provider Specialty	ABMS
Public Health and General Preventive Medicine	45756824	Public Health and General Preventive Medicine	Provider Specialty	ABMS
Pulmonary Disease	38004472	Pulmonary Disease	Provider Specialty	Specialty
Radiation Oncology	38004509	Radiation Oncology	Provider Specialty	Specialty
Radiology	45756825	Radiology	Provider Specialty	ABMS
Reproductive Endocrinology/Infertility	45756826	Reproductive Endocrinology/Infertility	Provider Specialty	ABMS
Rheumatology	38004491	Rheumatology	Provider Specialty	Specialty
Sleep Medicine	45756827	Sleep Medicine	Provider Specialty	ABMS
Spinal Cord Injury Medicine	concept id requested	Spinal Cord Injury Medicine	Provider Specialty	ABMS

Sports Medicine	45756828	Sports Medicine	Provider Specialty	ABMS
General Surgery	38004447	General Surgery	Provider Specialty	Specialty
Surgery of the Hand	38004480	Hand Surgery	Provider Specialty	Specialty
Surgical Critical Care	45756829	Surgical Critical Care	Provider Specialty	ABMS
Thoracic Surgery	38004473	Thoracic Surgery	Provider Specialty	Specialty
Thoracic and Cardiac Surgery	45756830	Thoracic and Cardiac Surgery	Provider Specialty	ABMS
Transplant Hepatology	45756831	Transplant Hepatology	Provider Specialty	ABMS
Undersea and Hyperbaric Medicine	45756832	Undersea and Hyperbaric Medicine	Provider Specialty	ABMS
Urology	38004474	Urology	Provider Specialty	Specialty
Vascular and Interventional Radiology	45756833	Vascular and Interventional Radiology	Provider Specialty	ABMS
Vascular Neurology	45756834	Vascular Neurology	Provider Specialty	ABMS
Vascular Surgery	38004496	Vascular Surgery	Provider Specialty	Specialty

NOTES: - General Pediatrics refers to Primary Care - Pediatric Medicine refers to the default assignment if a site is unable to distinguish which pediatric specialty the care site or provider has an assigned

A2. PEDSNet Person Language Concept Mapping Values

The below langauge listing is representative of the top 10 spoken languages of each of the 8 contributing sites. This list standard list will be used to map language values for consistency.

Language	concept_id	concept_name	domain_id	concept*class*id	standard_concept
Amharic	4182354	Amharic language	Observation	Qualifier Value	S
Arabic	4181374	Arabic language	Observation	Qualifier Value	S
Bengali	4052786	Bengali language	Observation	Qualifier Value	S
Burmese	4181727	Burmese language	Observation	Qualifier Value	S
Bosnian	40481563	Bosnian language	Observation	Qualifier Value	S
Cape Verde Creole	44814649	Other	Observation	Undefined	
Chinese	4182948	Chinese Language	Observation	Qualifier Value	S
Chinese(Cantonese)	4177463	Cantonese Chinese dialect	Observation	Qualifier Value	S
Chinese(Mandarin)	4181724	Mandarin dialect	Observation	Qualifier Value	S
English	4180186	English Language	Observation	Qualifier Value	S
French	4180190	French Language	Observation	Qualifier Value	S
Haitian/Creole	44802876	Haitian Creole Language	Observation	Qualifier Value	S
Japanese	4181524	Japanese Language	Observation	Qualifier Value	S
Korean	4175771	Korean Language	Observation	Qualifier Value	S
Mandarin	4181724	Mandarin dialect	Observation	Qualifier Value	S
Nepali	4175908	Nepali language	Observation	Qualifier Value	S
No information	44814650	No information	Observation	Undefined	S
None	44814650	No information	Observation	Undefined	S
null	44814650	No information	Observation	Undefined	S
Other	44814649	Other	Observation	Undefined	
Other Language	44814649	Other	Observation	Undefined	
Other/Unknown	44814649	Other	Observation	Undefined	
Portuguese	4181536	Portuguese language	Observation	Qualifier Value	S
Russian	4181539	Russian language	Observation	Qualifier Value	S
Sign	40483152	Sign language	Observation	Qualifier Value	S
Sign Language	40483152	Sign language	Observation	Qualifier Value	S
Somali	4182350	Somali language	Observation	Qualifier Value	S
Spanish	4182511	Spanish language	Observation	Qualifier Value	S
Unable to Collect	44814650	No information	Observation	Undefined	S
Unknown	44814653	Unknown	Observation	Undefined	S
Vietnamese	4181526	Vietnamese language	Observation	Qualifier Value	S