

OBSERVATIONAL MEDICAL OUTCOMES PARTNERSHIP

OMOP Common Data Model (CDM)
SDI ETL Mapping Specification V2.0
December 21, 2009

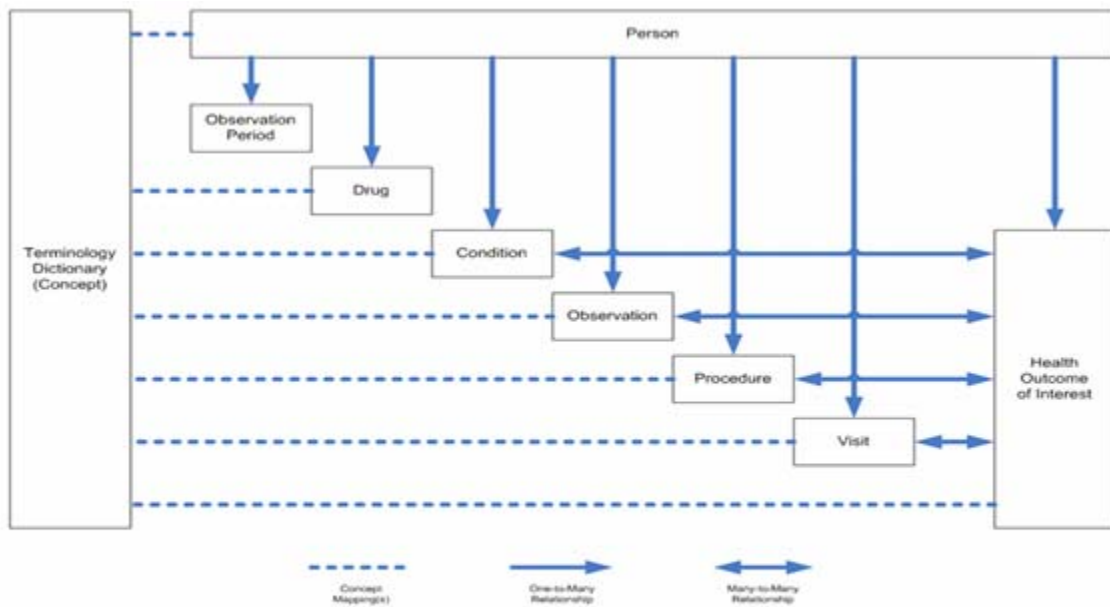


Table of Contents

1.0 Introduction

2.0 Source Data Mapping Approach

3.0 Source Data Mapping

3.1 Data Mapping

3.1.1 Table Name: PERSON

3.1.2 Table Name: DRUG_EXPOSURE

3.1.3 Table Name: CONDITION_OCCURRENCE

3.1.4 Table Name: VISIT_OCCURRENCE

3.1.5 Table Name: PROCEDURE_OCCURRENCE

3.1.6 Table Name: OBSERVATION

3.1.7 Table Name: OBSERVATION_PERIOD

3.2 Source Independent Data Mapping

3.2.1 Table Name: DRUG_ERA

3.2.2 Table Name: CONDITION_ERA

3.3 Reference Tables

3.3.1 Table Name: DRUG_EXPOSURE_REF

3.3.2 Table Name: CONDITION_OCCURRENCE_REF

3.3.3 Table Name: PROC_OCCURRENCE_REF

3.3.4 Table Name: OBSERVATION_TYPE_REF

3.3.5 Table Name: VOCABULARY_REF

3.3.6 Table Name: RELATIONSHIP_TYPE

Document Control

Change Record

Date	Author	Version	Change Reference
28-Oct-09	David Seligman, SDI	1.0	Adjusted OMOP Template for SDI's ETL process
06-Nov-09	David Seligman	1.1	Incorporation of edits/suggestions by Contributors for delivery to OMOP for review
21-Dec-09	David Seligman	2.0	Incorporates column name changes and changes to the business rules for the confidence field in the observation_period table.

Contributors

Name	Organization	Title
Shalini Bagga	SDI	Outcomes Researcher
Eileen Fonseca	SDI	Sr. Project Manager

Reviewers

Name	Role	Title	Date Reviewed

Document References

Document Title	Type of Reference	Document Location
OMOP ETL Mapping Specification		OMOP Basecamp

1.0 Introduction

This document reflects the requirements, assumptions, business rules and transformations for the implementation of the Common Data Model (CDM) as implemented by SDI . The ETL process was built using data and transformations as applicable to SDI.

The purpose of this document is to describe the ETL mapping of the proprietary or licensed data into the OMOP Common Data Model.

It is based on the OMOP ETL Specifications. General information that is covered by the OMOP ETL Specification will not be covered in this document, but a detailed discussion of the SDI-specific aspects of mapping and converting data to the standard CDM is provided.

The document is comprised of three main sections:

- Source Data Mapping: Describes major tables of the CDM schema and special data handling required for each table.
- Source Independent Data Mapping: Describes mapping process of the Drug_Era and Condition_Era.
- Data Mapping Reference tables.

In each section, the tables and their mapping are individually reviewed along with any source specific rules and exceptions.

The intended audience for this document will include both researchers that want to use the experience and learning in order to incorporate them into their own CDM construction.

2.0 Source Data Mapping Approach

In the OMOP ETL Specifications, this section covers the high-level assumptions and approach to extraction, transformation and loading (ETL) of raw source data into the Common Data Model (CDM). This high-level approach should be equivalent between the data sources obtained by OMOP and SDI. Please see a discussion of patient eligibility (inclusion exclusion criteria) under the observation period section..

3.0 Source Data Mapping

This section will describe mapping process and ETL conversions of data received from SDI data into Common Data Model.

3.1 Data Mapping

3 sources of SDI data are being used for this project. All SDI data is HIPAA-compliant; identifying elements of the patient are encrypted prior to being received by SDI and each patient is given a unique token provided through a patented process.

1) Private Practice Physician Office data (Dx): Centers for Medicare/Medicaid (“CMS-1500”) medical claims completed for patients seen by private practitioners. SDI’s private practice data is available in near real-time and covers roughly 1/3rd of all private practice physician offices in the United States. This data includes diagnoses, procedures, in-office administered drugs, charged amounts, servicing physician information, as well as other claim-level information.

2) Pharmacy data (Rx): National Council for Prescription Drug Programs (“NCPDP 5.2”) prescription claims submitted for patients receiving a prescription via retail pharmacies and some specialty pharmacies. The NCPDP prescription claims represent dispensed prescriptions for approximately 55% of all U.S. retail pharmacies. This data has information on payer type, cost, quantity dispensed, and days’ supply, among other things.

3) Hospital Charge Data Master data (Hx): Hospital Charge Data Masters reflect the daily, transactional patient charges received from hospital operational files from approximately 600 hospitals. The database consists primarily of short-term, non-federal hospitals reporting on the daily procedures, drugs, and other resources used.

SDI Dx and Rx data are stored in an Oracle database. The Hx data are stored in a *SQL* Server database. All transformed CDM data are stored in an oracle database on a dedicated server.

3.1.1 TABLE NAME: PERSON

The PERSON table contains basic patient demographics (all values are HIPAA-compliant to maintain a patient’s anonymous standing) from the SDI Rx, Dx, and Hx data. This information is mapped onto OMOP concept_ids.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
PERSON_ID	Patient_key_2 for Rx and Dx data. SDI_patient_key from Hx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.

Destination Field	Source Field	Applied Rule	Comment
YEAR_OF_BIRTH	pat_dob_ccyy from E1_patient (master patient table). Sometimes from Dx, Rx, or Hx data (see rules)	If pat_dob_ccyy is between 1924 and 2009, use that value. If the value is 0, assign 1924. Otherwise, use the minimum year of birth (based on activity date-minus age) from the Hx, Dx, and Rx records.	Patient ages over 85 are reset to 85 for HIPAA purposes. 0 indicates that this has happened. All patients that are aged 85+ years in 2009 are shown as 0 and are reset to year of birth of 1924 even though our data coverage for those persons in the CDM may be prior to 2009.
GENDER_CONCEPT_ID	pat_gender from E1_patient (master patient table).	F= 8532, M= 8507, otherwise 8551.	
RACE_CONCEPT_ID	Null	Null	Data not collected in Dx, Rx, or Hx data
LOCATION_CONCEPT_ID	Pat_zip (3 digit zip) from E1_patient (master patient table).	If the value is in the source_to_concept_map table as a zip code, use that concept_id, otherwise set to 0.	The patient's zip is as of 2009 or the patient's latest occurrence in any of SDI's datasets.
SOURCE_PERSON_KEY	Patient_key_2 for Rx and Dx data. SDI_patient_key from Hx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.
SOURCE_GENDER_CODE	pat_gender from E1_patient (master patient table).	Value comes directly from the record.	
SOURCE_LOCATION_CODE	Pat_zip from E1_patient (master patient table).	Value comes directly from the record.	
SOURCE_RACE_CODE	Null	Null	Data not collected in Dx, Rx, or Hx data

3.1.2 TABLE NAME: DRUG_EXPOSURE

The DRUG_EXPOSURE table contains drug utilization information for patients, and is derived from Rx and Dx data. We did not include Hx oral or injectable drug information

as it comes from unstructured text and the drug mapping (a text string search) process could be performed in the allotted time. Dx data allows the inclusion of products that are administered in physician offices. The Rx drug data is based on NDC drug codes and the Dx is based on CPT codes. These are mapped to OMOP concept_ids.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
DRUG_EXP OSURE_ID	claim_key for Rx, MSA-svcs counter, claim key for Dx.	Value comes directly from the record for Rx. 888888888888 msa_svcs_counter claim_key for Dx.	
DRUG_EXP OSURE_STA RT_DATE	date_of_service for Rx. svc_date for Dx.	Value comes directly from the record.	
DRUG_EXP OSURE_EN D_DATE	Null	Null	SDI does not collect this information.
PERSON_ID	Patient_key_2 for Rx and Dx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.
DRUG_CON CEPT_ID	Target_concept_id from source_to_concept_map table.	Rx mapped where source_vocabulary_code=09 and mapping_type=DRUG. Dx mapped where mapping_type='PROCEDURE DRUG'	
DRUG_EXP OSURE_TYP E	Rx or Dx record	1 for Rx records. 4 for Dx records.	
STOP_REAS ON	Null	Null	SDI does not collect this information.
REFILLS	number_of_refills_authorized for Rx	For Rx, value comes directly from the record. Null for Dx,	SDI does not collect this information for Dx.
DRUG_QUA NTITY	Quantity_dispensed for Rx records	For Rx, value comes directly from the record. Null for Dx,	SDI does not collect this information for Dx.
DAYS_SUPP LY	Days_supply for Rx records.	For Rx, value comes directly from the record. Null for Dx,	SDI does not collect this information for Dx.
SOURCE_D RUG_CODE	ndc_key for Rx records. prc_code for	Values come directly from the record.	

Destination Field	Source Field	Applied Rule	Comment
	Dx records		

3.1.3 TABLE NAME: **CONDITION_OCCURRENCE**

The **CONDITION_OCCURRENCE** table contains ICD-9-CM diagnoses from Dx and Hx data. This information is mapped to OMOP concept_ids.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
CONDITION_OCCURRENCE_ID	System Generated	System generated.	Unique but there may be gaps in the sequence.
CONDITION_ERA_START_DATE	svc_date for Dx. discharge_date for Hx	Values come directly from the records.	For Hx records (only affects those that were Inpatient), condition start date is set to the patient's discharge date as opposed to their admit date.
PERSON_ID	Patient_key_2 for Dx data.SDI_patient_key from Hx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.
CONDITION_ERA_END_DATE	Null	Null	SDI does not collect this information.

Destination Field	Source Field	Applied Rule	Comment
CONDITION_OCCURRENCE_TYPE	dx_code_position for Dx. icd9_diag_rank and ip_op_flag for Hx	dx_code_position+47 for Dx. For Hx when ip_op_flag='I' and icd9_diag_rank between 1 and 15 then icd9_diag_rank+1 when ip_op_flag='I' and icd9_diag_rank between 16 and 25 then icd9_diag_rank+284 when ip_op_flag='O' and icd9_diag_rank between 1 and 15 then icd9_diag_rank+32 when ip_op_flag='O' and icd9_diag_rank between 16 and 25 then icd9_diag_rank+294 In essence, this mapping is the condition ranking, transformed into the OMOP reference table values.	Some of these mappings are based on values inserted by SDI into the condition_occurrence_ref table.
CONDITION_CONCEPT_ID	dx_code for Dx. icd9_diag_code for Hx.	Mapped to target_concept_id in source_to_concept_map table. Periods are removed for this mapping. For Hx, when DISCH_STATUS_CODE IN ('40','41','42'), the patient has died and 4216643 is inserted as an extra record.	
STOP_REASON	Null	Null	SDI does not collect this information.
DX_QUALIFIER	Null	Null	SDI does not collect this information.
SOURCE_CONDITION_CODE	dx_code for Dx. icd9_diag_code for Hx.	Values come directly from the records. For Hx, when DISCH_STATUS_CODE IN ('40','41','42'), the patient has died and 4216643 is inserted as an extra record.	

3.1.4 TABLE NAME: VISIT_OCCURRENCE

The VISIT_OCCURRENCE table contains information on visits in Dx and Hx data. Information on the place of service is mapped to OMOP concept_id's.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
-------------------	--------------	--------------	---------

Destination Field	Source Field	Applied Rule	Comment
VISIT_OCCURRENCE_ID	System Generated	System generated.	Unique but there may be gaps in the sequence.
VISIT_START_DATE	For Dx svc_date. For Hx admit_date	Value comes directly from the record.	
VISIT_END_DATE	For Dx, null. For Hx, discharge_date	For Hx, the value comes directly from the record. For Dx, null.	For Dx, SDI does not collect this information.
PERSON_ID	Patient_key_2 for Dx data.SDI_patient_key from Hx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.
VISIT_CONCEPT_ID	For Dx, pos_code. For Hx, ip_op_flag.	For Dx, mapped to target_concept_id in source_to_concept_map table where mapping_type =PLACE OF SERVICE and source_vocabulary_code=300 (SDI-specific mapping). For Hx, when ip_op_flag ='I' then 8717 (inpatient hospital) or when ip_op_flag ='O' then 8756 (outpatient hospital). If the mapping is not found, 8844 (other).	Only one place of service per visit is allowed.
SOURCE_VISIT_CODE	For Dx, pos_code. For Hx, ip_op_flag	Value comes directly from the record.	

3.1.5 TABLE NAME: PROCEDURE_OCCURRENCE

The PROCEDURE_OCCURRENCE table contains information on medical procedures in Dx and Hx data using the ICD-9 codes. These codes are mapped to OMOP concept_id's.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
PROCEDURE_OCCURRENCE_ID	For Dx msa_svcs_counter, claim_key.	For Dx, 777777777777 msa_svcs_counter claim_key. For Hx, 666666666666 row number	

Destination Field	Source Field	Applied Rule	Comment
	For Hx, system generated.		
PROCEDURE_DATE	For Dx, svc_date. For Hx, proc_date.	Value comes directly from the record.	
PERSON_ID	Patient_key_2 for Dx data.SDI_patient_key from Hx data.	Value comes directly from the record.	Values are de-identified and HIPAA compliant.
PROCEDURE_CONCEPT_ID	For Dx, prc_code. For Hx, icd9_proc_code.	Mapped to target_concept_id in source_to_concept_map table where mapping_type='PROCEDURE.' Periods are removed for these purposes.	
SOURCE_PROCEDURE_CODE	For Dx, prc_code. For Hx, icd9_proc_code.	Value comes directly from the record.	
PROCEDURE_OCCURRENCE_TYPE	For Dx, msa_svcs_counter. For Hx, proc_code_rank.	For Dx, when msa_svcs_counter is between '01' and '06' then 21+msa_svcs_counter. Otherwise, 293+msa_svcs_counter. For Hx, when proc_code_rank is between 1 and 15, proc_code_rank+3. When proc_code_rank is between 16 and 25, proc_code_rank+288	Some of these mappings are based on values inserted by SDI into the condition_occurrence_ref table.

3.1.6 TABLE NAME: OBSERVATION

This table is empty since SDI does not capture this information.

The field mapping is performed as follows:

Destination Field	Source Field	Applied Rule	Comment
OBSERVATION_OCCURRENCE_ID	Null	Null	SDI does not collect this information.

Destination Field	Source Field	Applied Rule	Comment
PERSON_ID	Null	Null	SDI does not collect this information.
SOURCE_OBS_CODE	Null	Null	SDI does not collect this information.
OBSERVATION_CONCEPT_ID	Null	Null	SDI does not collect this information.
OBS_VALUE_AS_NUMBER	Null	Null	SDI does not collect this information.
OBSERVATION_DATE	Null	Null	SDI does not collect this information.
OBS_RANGE_LOW	Null	Null	SDI does not collect this information.
OBS_RANGE_HIGH	Null	Null	SDI does not collect this information.
OBSERVATION_TYPE	Null	Null	SDI does not collect this information.
OBS_VALUE_AS_STRING	Null	Null	SDI does not collect this information.
OBS_VALUE_AS_CONCEPT_ID	Null	Null	SDI does not collect this information.
OBS_UNITS_CONCEPT_ID	Null	Null	SDI does not collect this information.

3.1.7 TABLE NAME: OBSERVATION_PERIOD

The OBSERVATION_PERIOD table contains information on the time period that patients were in Rx, Dx, and Hx data. Due to the fact that SDI has different sources of Rx, Dx, and Hx data, this information must be calculated and conveyed separately. This information is provided on a month by month basis, with records within a patient combined across months when appropriate (i.e. the months are continuous and there

are no differences in availability and confidence across the months). The availability fields are based on whether or not a patient had an Rx, Dx, or Hx claim in a month.

The confidence field is SDI's best estimate of whether we are fully capturing each patient's data in each month. While this measure of confidence is calculated separately for Rx, Dx, and Hx, they are combined into 1 field called confidence, according to the logic in the table below.

Dx Confidence:

It was determined for each patient key whether a patient's practitioner is stable in the Dx data. A Dx stable practitioner is defined as meeting 3 different measures of completeness of a patient load in the SDI data in a given month. All patients with a stable practitioner in the analysis month are "eligible" patients (Dx confidence).

Rx Confidence:

Since the data load spans over 5 years, two eligibility windows are used, July, 2004 – June, 2006 and July, 2006 – June, 2009. All pharmacies that are completely captured through the eligibility window for SDI data are selected. These are "eligible" stores. We have Rx confidence in a patient for an eligibility window if a patient has a claim from an eligible store in the first and last quarter of an eligibility window.

Hx Confidence:

If any of a patient's hospitals are stable in a given month, that patient will be flagged as Hx confident for that month.

When using the observation_period table, a few points should be kept in mind:

- 1) As mentioned above, SDI has separate sources of RX, Dx, and Hx data.
- 2) Patients can move in and out of our data as they change doctors or pharmacies or our data feeds change.
- 3) Availability indicates that there was a claim, whereas confidence indicates whether we believe we are capturing all of a patient's data in a given month. Note that a patient could have a claim in a month but we might not have confidence that we are capturing all of that patient's data in that month.

The field mapping is as follows:

Destination Field	Source Field	Applied Rule	Comment
OBSERVATION_PERIOD_ID	System Generated.	System generated.	Unique but there may be gaps in

Destination Field	Source Field	Applied Rule	Comment
			the sequence.
OBSERVATION_PERIOD_START_DATE	For Rx, date_of_service. For Dx,svc_date.For Hx, discharge_date.	Start date of an observation period. Will be the 1 st of a month. Within a patient, if any of the values differ from that of the previous month or there is a gap in months, a new observation period will start. Otherwise, observation periods that span over multiple months will be recorded in one record with a start and end date spanning multiple months.	
OBSERVATION_PERIOD_END_DATE	For Rx, date_of_service. For Dx,svc_date.For Hx, discharge_date.	End date of an observation period. Will be the last day of a month. Within a patient, if any of the values differ from that of the previous month or there is a gap in months, a new observation period will start. Otherwise, observation periods that span over multiple months will be recorded in one record with a start and end date spanning multiple months.	
PERSON_ID	For Dx and Rx, Patient_key_2. For Hx, SDI_patient_key.	The value comes directly from the record.	These values are de-identified and HIPAA compliant.
PERSON_STATUS_CONCEPT_ID	Null	Null	SDI does not collect this information.
RX_DATA_AVAILABILITY	date_of_service, Patient_key_2	For each, month, 'Y' if there is a record for the patient in Rx data. If Dx or Hx data has a record for that patient, and Rx does not, 'N.' If there are no records from any of the sources, there will be no record for the month.	
DX_DATA_AVAILABILITY	svc_date, Patient_key_2	For each, month, 'Y' if there is a record for the patient in Dx data. . If Rx or Hx data has a record for that patient, and Dx does not, 'N.' If there are no records from any of the sources, there will be no record for the month.	
HOSPITAL_DATA_AVAILABILITY	discharge_date SDI_patient_key	For each, month, 'Y' if there is a record for the patient in Hx data. . If Dx or Rx data has a record for that patient, and Hx does not, 'N.' If there are no records from any of the sources, there will be no record for the month.	
CONFIDENCE	For Rx, date_of_service Patient_key_2, ncpdp_provider_key.	Collapses confidence in, Dx, Rx, and Hx data into 1 field according to this table: Dx conf Rx conf Hx Conf Overall Confidence	

Destination Field	Source Field	Applied Rule	Comment
	For Dx, svc_date,	Y N N 1	
	Patient_key_2,	N Y N 2	
	practitioner_key,	N N Y 3	
	data_feed.	Y Y N 4	
	For Hx, discharge_date	Y Y Y 5	
	SDI_patient_key,	Y N Y 6	
	stable_flag	N Y Y 7	
		N N N 0	
		The individual components of overall confidence are not reported separately but are all embedded in the value for overall confidence. Dx confidence for a patient in a month indicates whether or not we believe we captured all of that patient's Dx data in a month. Rx confidence for a patient in a month indicates whether or not we believe we captured all of that patient's Rx data in a month. Hx confidence for a patient in a month indicates whether or not we believe we captured all of that patient's Hx data in a month. See above for details.	

3.2 Source Independent Data Mapping

The following mapping processes ought to work independent of the source feed. Describe here if significant changes have to be made. No significant changes have been made.

Unless otherwise specified in the sections below, Source Independent Data Mapping will follow specifications as defined in ETL Mapping Specification document.

3.2.1 TABLE NAME: DRUG_ERA

All Drug Eras are recorded in the DRUG_ERA table based on the following field mapping:

Destination Field	Source Field	Applied Rule	Comment
DRUG_ERA_ID			

Destination Field	Source Field	Applied Rule	Comment
DRUG_ERA_START_DATE			
DRUG_ERA_END_DATE			
PERSON_ID			
DRUG_EXPOSURE_TYPE			
DRUG_CONCEPT_ID			
DRUG_EXPOSURE_COUNT			

3.2.2 TABLE NAME: **CONDITION_ERA**

Condition Era table is constructed through an aggregation of individual Condition Occurrences recorded in the **CONDITION_OCCURRENCE** table.

All Condition Eras are recorded in the **CONDITION_ERA** table based on the following field mapping:

Destination Field	Source Field	Applied Rule	Comment
CONDITION_ERA_ID			
CONDITION_ERA_START_DATE			
PERSON_ID			
CONFIDENCE			
CONDITION_ERA_END_DATE			
CONDITION_CONCEPT_ID			
CONDITION_OCCURRENCE_TYPE			
CONDITION_OCCURRENCE_			

Destination Field	Source Field	Applied Rule	Comment
COUNT			

3.3 Reference Tables

The following contain reference tables that were derived from the OMOP Thomson and GE source data. They reflect the content of those databases. It is assumed that you will update these tables to describe your data more adequately.

3.3.1 TABLE NAME: DRUG_EXPOSURE_REF

Drug Exposure Types are used to define the indicators from which exposures have been extracted. They also define the characteristics of the exposure and the level of aggregation. The following Drug Exposure Types are allowed.

Drug Exposure Type	Drug Exposure Type Description	Persistence Window (In Days)
1	Prescription Dispensed	
2	Prescription Written	
3	Medication List	
4	Physician Administered Drug (Identified as Procedure)	
5	Inpatient Administration	
6	Drug Era – 0 day window	0
7	Drug Era – 30 days window	30

3.3.2 TABLE NAME: CONDITION_OCCURRENCE_REF

Condition Occurrence Reference table serves as the reference listing of various types of Condition Occurrences recorded for analysis. The Condition Occurrence Type conveys the indicator(s) from which the Condition Occurrence was captured and defines the characteristic of the occurrence and the level of aggregation.

This table is loaded based on a reference list of Occurrence types, descriptions and persistence window settings. The current listing is as follows:

Condition Occurrence Type	Condition Occurrence Type Description	Condition Occurrence Position	Persistence Window (in days)
1	Inpatient Detail	Primary	
2	Inpatient Detail	1	
3	Inpatient Detail	2	
4	Inpatient Detail	3	

Condition Occurrence Type	Condition Occurrence Type Description	Condition Occurrence Position	Persistence Window (in days)
5	Inpatient Detail	4	
6	Inpatient Detail	5	
7	Inpatient Detail	6	
8	Inpatient Detail	7	
9	Inpatient Detail	8	
10	Inpatient Detail	9	
11	Inpatient Detail	10	
12	Inpatient Detail	11	
13	Inpatient Detail	12	
14	Inpatient Detail	13	
15	Inpatient Detail	14	
16	Inpatient Detail	15	
17	Inpatient Header	Primary	
18	Inpatient Header	1	
19	Inpatient Header	2	
20	Inpatient Header	3	
21	Inpatient Header	4	
22	Inpatient Header	5	
23	Inpatient Header	6	
24	Inpatient Header	7	
25	Inpatient Header	8	
26	Inpatient Header	9	
27	Inpatient Header	10	
28	Inpatient Header	11	
29	Inpatient Header	12	
30	Inpatient Header	13	
31	Inpatient Header	14	
32	Inpatient Header	15	
33	Outpatient Detail	1	

Condition Occurrence Type	Condition Occurrence Type Description	Condition Occurrence Position	Persistence Window (in days)
34	Outpatient Detail	2	
35	Outpatient Detail	3	
36	Outpatient Detail	4	
37	Outpatient Detail	5	
38	Outpatient Detail	6	
39	Outpatient Detail	7	
40	Outpatient Detail	8	
41	Outpatient Detail	9	
42	Outpatient Detail	10	
43	Outpatient Detail	11	
44	Outpatient Detail	12	
45	Outpatient Detail	13	
46	Outpatient Detail	14	
47	Outpatient Detail	15	
48	Outpatient Header	1	
49	Outpatient Header	2	
50	Outpatient Header	3	
51	Outpatient Header	4	
52	Outpatient Header	5	
53	Outpatient Header	6	
54	Outpatient Header	7	
55	Outpatient Header	8	
56	Outpatient Header	9	
57	Outpatient Header	10	
58	Outpatient Header	11	
59	Outpatient Header	12	
60	Outpatient Header	13	
61	Outpatient Header	14	
62	Outpatient Header	15	

Condition Occurrence Type	Condition Occurrence Type Description	Condition Occurrence Position	Persistence Window (in days)
63	Problem List		
64	Condition Era		0
65	Condition Era		30
66	Death at Discharge		

3.3.3 TABLE NAME: PROC_OCCURRENCE_REF

Procedure Occurrence Reference table serves as the reference listing of various types of Procedure Occurrences recorded for analysis. The Procedure Occurrence Type conveys the indicator(s) from which the Procedure Occurrence was captured, and defines the characteristic of the occurrence.

This table is loaded based on a reference list of occurrence types, position and descriptions. The current listing is as follows:

Procedure Occurrence Type	Procedure Occurrence Type Description	Procedure Occurrence Position
1	Inpatient Detail	Primary
2	Inpatient Detail	1
3	Inpatient Header	Primary
4	Inpatient Header	1
5	Inpatient Header	2
6	Inpatient Header	3
7	Inpatient Header	4
8	Inpatient Header	5
9	Inpatient Header	6
10	Inpatient Header	7
11	Inpatient Header	8
12	Inpatient Header	9
13	Inpatient Header	10
14	Inpatient Header	11
15	Inpatient Header	12
16	Inpatient Header	13
17	Inpatient Header	14

Procedure Occurrence Type	Procedure Occurrence Type Description	Procedure Occurrence Position
18	Inpatient Header	15
19	Outpatient Detail	Primary
20	Outpatient Detail	1
21	Outpatient Header	Primary
21	Outpatient Header	1
22	Outpatient Header	2
23	Outpatient Header	3
24	Outpatient Header	4
25	Outpatient Header	5
26	Outpatient Header	6
27	EHR Order	

3.3.4 TABLE NAME: OBSERVATION_TYPE_REF

Assignment of an Observation type is essential to determine the type of source data, level of standardization, and coding, as well as the type of result recorded for the Observation. The Observation Types include the following.

- Lab Observation Numeric Result
- Lab Observation Text
- Lab Observation Concept Code Result
- Numeric Observations from EHRs (e.g., blood pressure). These are tracked separately and not rolled into other Lab Observation categories
- EHR observations with text results (e.g., reason for visit)
- Chief Complaint

Data in the OBSERVATION_TYPE_REF table is as follows:

Observation_Type	Observation_Type_Desc
LON	Lab Observation Numeric Result
LOT	Lab Observation Text
LOC	Lab Observation Concept Code Result
HER	Observation recorded from Electronic Health Records

Observation_Type	Observation_Type_Desc
TEM	Observation recorded from Electronic Health Records with text results
CHC	Chief Complaint

3.3.5 TABLE NAME: VOCABULARY_REF

The Vocabulary Reference entity includes a list of all standard terminologies from which Concepts have been extracted for observational analysis using the Common Data Model. The reference table is populated with a single record for each Vocabulary source and includes a descriptive name for the Vocabulary source.

Data in the VOCABULARY_REF table is as follows:

VOCABULARY_CODE	VOCABULARY_NAME
01	SNOMED
02	ICD9 CM
03	ICD9 Procedure
04	CPT
05	HCPCS
06	LOINC
07	NDFRT
08	RxNorm
09	NDC
52	THOMSON
51	GE
15	MedDRA
10	GPI
54	OMOP Intermediate Concept – Drug
55	OMOP Generic
53	OMOP Intermediate Concept-Condition
11	UCUM
12	HL7 ADMINISTRATIVE SEX
13	CDC RACE/ETHNICITY

VOCABULARY_CODE	VOCABULARY_NAME
14	CMS PLACE of SERVICE

3.3.6 TABLE NAME: RELATIONSHIP_TYPE

A Concept Relationship is standardized via the Relationship Type entity. The Relationship Type codes are adopted from SNOMED-CT. Where the relationships are hierarchical, the Relationship Type captures the "IS A" string that identifies it as a Subtype relationship. Where the relationship is an Object Attribute Value relationship, the Relationship Type holds the Concept that defines the Attribute.

Data in the RELATIONSHIP_TYPE table is as follows:

RELATIONSHIP_TYPE	RELATIONSHIP_DESCRIPTION
001	LOINC Map To
002	RXNORM Has precise ingredient
003	RXNORM Has tradename
004	RXNORM Has dose form
005	RXNORM Has form
006	RXNORM Has ingredient
007	RXNORM Constitutes
008	RXNORM Contains
009	RXNORM Reformulation of
010	Subsumes
011	NDFRT Has DoseForm
012	NDFRT Induces
013	NDFRT May Diagnose
014	NDFRT Has PE
015	NDFRT CI PE
016	NDFRT Has Ingredient
017	NDFRT CI ChemClass
018	NDFRT Has MoA
019	NDFRT CI MoA

RELATIONSHIP_TYPE	RELATIONSHIP_DESCRIPTION
020	NDFRT Has PK
021	NDFRT May Treat
022	NDFRT CI With
023	NDFRT May Prevent
024	NDFRT Has Active Metabolites
025	NDFRT Site of Metabolism
026	NDFRT Effect May Be Inhibited By
027	NDFRT Has Chemical Structure
028	NDFRT RXN RELA
120	MedDRA Has Hierarchy Level
121	MedDRA Has System Organ Class
122	MedDRA Has High Level Group Term
123	MedDRA Has High Level Term
124	MedDRA Has Preferred Term
101	OMOP Intermediate Condition Concept To SNOMED
102	OMOP Intermediate Drug Concept To RxNorm
041	Indirect morphology
072	Procedure site – Direct
060	Scale type
093	CPT – SNOMED
074	Procedure device
032	Pathological process
045	Has intent
050	Episodicity
037	Occurrence
056	Associated morphology
042	Indirect device
030	Procedure site
091	HLI ICD9CM Procedure to SNOMED Category

RELATIONSHIP_TYPE	RELATIONSHIP_DESCRIPTION
083	Using substance
080	Surgical approach
043	Has specimen
089	Hli ICD-9-CM to SNOMED Category
049	Finding site
054	Component
040	Interprets
039	Laterality
038	Method
068	Subject relationship context
062	Specimen procedure
036	Access
065	Specimen source topography
085	Clinical course
087	Finding method
064	Specimen source morphology
048	Has active ingredient
058	Measurement Method
044	Has interpretation
070	After
076	Finding context
053	Direct device
071	Associated procedure
073	Procedure site - Indirect
063	Specimen source identity
092	Hli ICD9CM Procedure to SNOMED Specific
035	Revision status
079	Associated with
046	Has focus

RELATIONSHIP_TYPE	RELATIONSHIP_DESCRIPTION
031	Priority
033	Part of
075	Procedure morphology
029	Recipient category
061	Time aspect
082	Using energy
057	Associated finding
069	Has dose form
067	Due to
047	Has definitional manifestation
088	Finding informer
094	CPT EQUAL SNOMED
059	Property
055	Causative agent
077	Procedure context
051	Direct substance
090	Hli ICD-9-CM to SNOMED Specific
078	Temporal context
034	Severity
084	Using access device
086	Route of administration
052	Direct morphology
081	Using device
066	Specimen substance